NURSING AND HYGIENE

R. LAWTON ROBERTS, M.D.

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ILLUSTRATED LECTURES

ON

NURSING AND HYGIENE

Companion Volume by the same Author.

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ILLUSTRATED LECTURES
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ILLUSTRATED LECTURES

ON

NURSING AND HYGIENE

BY

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OF PUBLIC HEALTH; HONORARY LIFE MEMBER OF, AND
LECTURER AND EXAMINER TO, THE ST. JOHN
AMBULANCE ASSOCIATION

SECOND EDITION

WITH ILLUSTRATIONS

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TO

SURGEON-MAJOR GEORGE A. HUTTON,

LATE RIFLE BRIGADE (THE PRINCE CONSORT'S OWN),

THIS LITTLE BOOK IS DEDICATED,

IN RECOGNITION OF HIS ZEALOUS WORK ON BEHALF OF

SUFFERING HUMANITY;

AND IN REMEMBRANCE OF MUCH

VALUABLE ASSISTANCE AND KINDNESS RECEIVED

BY

THE AUTHOR

PREFACE TO SECOND EDITION

The plan and general scope of the work remains unaltered; but additional information is given on the artificial lighting of rooms, the dietary of the sick, and other matters, which, it is hoped, will add to the usefulness of the book.

R. L. R.

Ruabon;
March, 1892.

PREFACE

THIS book is published in response to a request for a companion volume to *Ambulance Work.* Its title—*Nursing and Hygiene*—is taken from the heading, and its contents are mainly arranged on the plan, of the syllabus of the advanced Nursing course of the St. John Ambulance Association.

In these latter days we have reason to be proud of our *trained nurses,* carefully taught as they are in the excellent training institutions associated with our large Hospitals, instructed by the Medical Staff of these establishments, as well as by highly gifted and experienced Lady Superintendents, and thoroughly educated in the management and care of the sick by daily experience in the wards of every kind of injury, every phase of disease, and all the numerous details of practical nursing.

These professional nurses—women who have adopted the "care of the sick" as their vocation—are actively engaged as *Hospital Nurses,* in buildings especially constructed for the reception and care of the sick; as *Private Nurses,* in the patient's own dwelling where the nurse herself also resides for the time being; and as *District Nurses,* in the homes of the sick poor, the care and management of the sick here being conducted during regular visits, since, from limited space, it is impossible for the nurse to sleep in the sickroom or house.

Our gracious Sovereign, ever mindful of the welfare of her subjects, presented £70,000 (of the money subscribed on the occasion of her Jubilee by the women of England) for the promotion of improved means for nursing the sick poor. This was a most happy inspiration of Her Majesty, since it is truly pointed out by Mrs. Dacre Craven (than whom in this matter there is no higher authority) that "the occurrence of illness in a family of the poorer classes usually finds the members of it destitute of the commonest sick appliances, ignorant of the simplest means of nursing, and unconscious of preventable sanitary evils surrounding the patient which may impede or prevent recovery;" and further, that, for District Nurses, a "higher education in addition to the technical and moral training and discipline which must be undergone in a well-organised hospital, and a higher grade of women are needed, so that they may be qualified to act as real aids to the medical man of whose patients they are put in charge."[1]

Some improvement in the plan on which the nursing arrangements are carried out in our hospitals and training Institutions may be, it seems from recent inquiries, necessary. Yet this will *ever* be the case, for as we gain in knowledge, as Medicine, Surgery, and Hygiene perpetually advance by great and rapid strides, so will the training and instruction of our nurses—those Helpmates of the Physician, Surgeon, and Hygienist—of necessity need bringing up to date. And all this means more work, increased mental strain, greater physical endurance. "A good nurse of twenty years ago," says Miss Nightingale, "had not to do the twentieth part of what she is required by her physician or surgeon to do now. And every five or ten years a nurse really requires a second training now-a-days."[2] We look forward, however, confidently to the future developments of trained nursing, which after all is now, comparatively speaking, but in its infancy; and yet in this its early growth commands general respect, admiration, and sympathy. Especially do we look forward with trust and hope to the future of Queen Victoria's Jubilee Institute, established by the munificence of Her Majesty, and sympathise heartily with its object—"eventually to provide in every district throughout the three kingdoms some means of nursing the poor in their own homes."

There is one truth in connection with trained nursing, however excellent, which should never be lost sight of; it can never compensate for that lamentable ignorance of the elements of nursing and of the simplest laws of health which prevails throughout all classes of society.

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[1] *Servants of the Sick Poor.*

[2] "Training of Nurses," in Dr. Quain's *Dictionary of Medicine.*

Comparatively speaking—that is, compared with the population at large—it is but a limited number of families who can afford the luxury of a trained Private Nurse; and of these many have a deep-rooted objection to admitting a stranger into their sickroom. But even among those who are both able and willing to employ a trained nurse, the battle with disease is too often wellnigh lost before it has properly commenced, ere the nurse is sent for, through the ignorance and helplessness of the patient's relatives. And in those families who prefer not, or, though not belonging to the "poorer classes," cannot afford to pay for trained nursing, how pitiable is the case of the sick if, as happens far too often, the relatives, though anxious, devoted, loving, and self-denying, are absolutely helpless from want of knowledge in the simplest details of nursing and the commonest needs of the sickroom! Such a state of things is indeed pitiable in the extreme for all concerned; *bad for the patient,* since injudicious feeding, uncleanliness of the sick and the sickroom, polluted air, neglect of the simplest sanitary precautions, can only lead to disaster; *bad for the relatives* too, saddened in after times by many an embittered longing, many a sickening wrench at the thought of "what might have been." Experience certainly teaches; but at what a cost! Referring to this matter, the late Dr. Milner Fothergill remarked, "In families where illness is not unknown, an acquaintance with the wants of sick persons is found;" but, added he with great significance, "how they have purchased their knowledge it may be well not to inquire."[1]

Such being the case with the educated and well-to-do, how can it be otherwise amongst the poor, who have no opportunities of learning, and are obliged by poverty to live overcrowded, in a "close" atmosphere, amid dust and other accumulations—in short, under more or less unhealthy conditions? "There is probably," writes Mrs. Dacre Craven, from personal experience, "only the *one* room for the whole family, which has to serve as sleeping-room, kitchen, washing and dwelling-room. The soiled linen, dirty or disused utensils, and very often the coals, are kept under the bed. The window rarely opens at the top, or if it does it has no sash, and must drop one or two feet to its wooden rest.

[1] *Manual of Dietetics.*

Each room, with its six or seven inmates, has only one pail or gallon jar to hold the clean water for cooking and all other purposes, and one pail to hold the soiled water and refuse of all kinds."[1] I quote this vivid description to show how difficult it is to nurse and manage the sick in the homes of the poor, and how necessary it is to endeavour by a wide-spread and kindly effort to instruct the poor themselves, as well as other classes of society, in the rudiments of nursing and the requirements of health. To quote from Mrs. Dacre Craven again: "If even among the rich and well-educated the generality of people think that any woman can nurse, this is still more the case among the working classes, who in the hour of their need have to depend exclusively on the untaught, love-prompted care of wife, sister, or daughter. How many lives among all classes are yearly lost by that trust it would be impossible to compute, and for each life thus thrown away we may count another almost equally sacrificed; broken down by the combination of severe labour and trying emotions—labour threefold harder to the untrained labourer; emotion from which the professional nurse would be almost as free as the physician."[2]

Now we all devoutly pray that the hopes founded on the splendid gift of our gracious Queen may be in due course fulfilled, and that every district in Great Britain and Ireland may have, in the coming by-and-by, its own trained nurse. Yet, as was pointed out by the Duke of Westminster at Birkenhead on 29th March, this noble work can only be accomplished after "a great deal of labour and a great deal of very thorough and practical training on the part of the nurses." The same point was dealt with still more forcibly by the *Lancet*, 19th July:—"The difficulty of finding a sufficient supply of persons good enough to undertake, and capable enough to discharge those delicate and arduous duties will doubtless be the most serious difficulty with which the directors of the movement will have to grapple; . . . to persevere and to succeed in such an office will tax the highest qualities of the very best of women." Moreover the pecuniary part of the question must not be lost sight of, since "it is manifest that the extension of this national work must depend upon the formation of local institutions, and the maintenance of them when once started must be the result of the charitable efforts of those who live in the neighbourhood."[1]

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[1] *Servants of the Sick Poor.*

[2] *Ibid.*

Such are some of the difficulties in the way of the Queen's Jubilee Institute; but supposing (as we trust and believe will be the case) all obstacles are successfully overcome, and each neighbourhood throughout the length and breadth of the land can boast of a "Queen's Nurse," there will *still* be the necessity of general instruction to the women of both the classes and the masses in the rudiments of nursing and the elementary laws of health. The middle and upper classes will be in precisely the same position as they were before the establishment of Queen's Nurses. The "poor in the land" will doubtless gain "lasting benefits in many ways"—but after all to a *limited extent*. As Surgeon-Major Hutton concisely put it at South Shields on 30th May, "all these various training institutions, what are they among the thirty-five millions of inhabitants of these islands? . . . Even with the excellent and praiseworthy system of district nurses, what is one paid nurse, say in a district of some 5000 persons, and a number of sick? Her services to each individual can only be very transitory, and her visits of very short duration, and perhaps many of the cases want continuous attention both by night and day." Apart from all this, it is only right that the mothers, wives, sisters, and daughters (on whom the business of nursing always falls) of the poorer classes, and indeed of all grades of society, should possess sufficient knowledge to tend their own sick without depending in a helpless and aimless manner on the chance of a trained nurse or some clever neighbour being available.

Moreover, instruction in nursing (in the broad sense of the term) means instruction in the elementary laws of health as well as in the care of the sick, so that such teaching enables people to avoid or prevent disease; and "prevention is better than cure."

A general knowledge of the elements of nursing and of the arrangements most conducive to health being so necessary to the well-being of the community at large, it only remains to find how such instruction may be best and most conveniently given to women of all classes and occupations. This question is settled by the action of the St. John Ambulance

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[1] *Statement as to the Past and Present Position of Queen Victoria's Jubilee Institute for Nurses.*—2nd July, 1890.

Association—and by *this Association*, as far as I am aware, *only*. The Association "possesses a numerous staff of competent instructors able and willing to afford the necessary information;" it has its "centres and classes for work in every important town and city in England, in many country villages, and in several of our English colonies and dependencies beyond the sea;" it carries the instruction in nursing to the homes of the people of all classes, and so imparts to the mothers, wives, sisters, and daughters of the nation such knowledge as leads to "infinite good in the diminution of suffering and the prolongation of life"—knowledge *without* which the anxious and willing relatives, in a case of sickness, are like an "ill-drilled mob," but *with* which the different members of the family "fall each into his or her place like well-disciplined soldiers."

The benefits derived by the teaching of the Association are further maintained and developed by the members of the classes associating together into organised bodies, called *Nursing Corps*, or *Guilds*, by which means the knowledge acquired is kept up and extended, and a system of *District Nursing* is established; the members of the Corps visiting and tending the sick poor in their own homes. There is simply no limit to the good which may be done by such a corps, either solely through its own members or in connection with a professional nurse. In the latter arrangement the professional nurse either occupies the position of "Superintendent," or tends the most serious cases, while the less severe ones are nursed by the members of the Corps. Lady pupils of the Association may, I think, feel encouraged by Mrs. Dacre Craven's opinion as to the suitability of this district work for gentlewomen. "Of all employments open to gentlewomen, there is none more suitable to them than nursing, and especially nursing among the sick poor in their own homes, where tact, discretion, and good breeding are especially needed to introduce sanitary reforms, where laws of health, order, and cleanliness are neglected or wholly unknown, and to effect this without hurting the feelings of those who are to benefit by the change."[1]

As to the value and usefulness of the work of the Association, strong testimony is given by those who have had opportunities of judging. Surgeon-Major Hutton, for instance, who is constantly hastening hither and thither—one might almost say from Dan to Beersheba—in the prosecution of his benevolent labours *pro utilitate hominum*, says, in answer to inquiries, "There are many facts before us of the great improvement in nursing among the poor, and in miners' cottages, &c., since the introduction of the work of the St. John Ambulance Association amongst them. Some time ago I had the testimony of an old country doctor, of forty years' experience in practice, who said, 'I have noticed that the home nursing of cases is done better in the houses where there has been ambulance instruction; the wives and daughters are more attentive to the instructions given by their medical man than formerly.' And (continues Surgeon-Major Hutton) I am constantly receiving from various parts of the country testimony to the same effect of the value and usefulness of the home-nursing instruction of the St. John Ambulance Association, and of the different Nursing Guilds."

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[1] *Servants of the Sick Poor.*

In response to inquiries, I have received similar testimony as to the value of the Nursing Corps which have been formed in different parts of the kingdom (under the auspices of the Ambulance Association) for the nursing of the sick poor in their own homes.[1]

The St. John Ambulance Association is able and anxious, as has been already insisted upon, to distribute the necessary instruction far and wide throughout Britain, her colonies and dependencies. The representatives of all grades of society, from Royalty to the inmates of our humblest cottages, are even now numbered amongst the pupils of the Association. New classes are ever being formed. Fresh Corps are constantly being established. Women instructed by the Association are found ministering to their suffering relatives, tending the sick poor in their own dwellings, and taking part in public representative gatherings—such, for example, as the review of Ambulance Corps by Lord Wolseley, on 5th July, in Wollaton Park, Nottingham.

This is as it should be—to promote universal instruction in *Home Nursing*—truly a "labour of love," the proper carrying out of which forms, "in the hour of need, the silver lining to the dark cloud of illness."

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[1] Dr. E. L. Robinson, for example, tells me that the Guernsey "Corps, so far as it goes, is of the greatest value, and is an immense boon to the poor."

To encourage efficient *District Nursing* too,—"For ye have the poor with you always, and whensoever ye will ye may do them good."

And when, by means of such newly found knowledge, the sufferings of some less fortunate brother or sister are assuaged, some poor friend is helped through the tide of illness along the high road to recovery—some little one is brought from writhing anguish to smiling happiness—when touching and overwhelming gratitude bursts irrepressibly forth in response to a kindly word or a gracious act—haply there may be an echo of Carton's last thought,—

> "It is a far, far better thing that I do, than I have ever done."

While preparing this little volume, much valuable assistance has been most courteously and readily afforded me (in the form either of printed matter otherwise unobtainable, information on special points, or advice) by many ladies and gentlemen interested in the subject. My thanks are more particularly due to Mrs. Dacre Craven (*née* Miss Florence S. Lees); the Lady Superintendents of the Metropolitan and a few Provincial Hospitals, especially Miss Lückes; the Honorary Secretaries of several Nursing Corps, notably Miss Mollett (Guernsey), Miss Murray (Richmond), Miss Fullagar (Leicester), Mrs. Falkner (Newark), and Miss Robson (South Shields); also Lieut.-Col. Sir Herbert Perrott, of St. John's Gate; Surgeon-Major Hutton, of Leamington; the Medical Superintendent of the South-Eastern Fever Hospital (London); and Dr. E. L. Robinson, of Guernsey.

With the view of rendering the book more useful, numerous figures have been introduced illustrative of the text; and for these figures—sixty-nine in number—I am indebted to many sources, which are duly acknowledged in the *List of Illustrations*.

R. LAWTON ROBERTS, M.D.

RUABON, NORTH WALES
October, 1890.

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LECTURE I

INTRODUCTORY

Nursing, Sanitary measures, and *Hygiene*—Need of sanitary measures both for the healthy and the sick—Training, qualifications, and duties of nurses—Home nursing and district nursing—Need of general instruction in nursing—Work of St. John Ambulance Association—Difference between doctoring and nursing—Miss Nightingale, Miss Lückes, and Miss Wood on the essential qualities of a good nurse—The Nurse: her character, manner, conversation, dress, food, exercise, sleep, ablutions, precautions against finger-poisoning, &c.

I AGAIN appear before you on behalf of the St. John Ambulance Association; but I have now to speak to you of matters very different from those which occupied us on former occasions. During the first course of lectures which you attended, you were shown the different ways of giving temporary help to persons injured or taken suddenly ill. In this second and advanced course, which we commence to-day, your studies will be of quite another kind. Instead of "First Aid," I have to direct your attention to that "special work of mercy"—*Nursing,* the care of the sick, and the ministering to their many wants; and also to those precautions regarding the purity of the air we breathe and the water we drink, the choosing and cooking of our food, cleanliness, warmth, light, and similar matters equally necessary for the preservation of health and the recovery of the sick. Such precautions are spoken of as *Sanitary* measures, because they preserve our health; and the study of everything which influences our health, and the carrying out of measures for the preserving of health (and therefore for the prevention of disease) form the science and art of *Hygiene.*

You know from your own experience the need of proper *sanitary* (or *hygienic*) measures—the need of pure water, of wholesome and suitably cooked food, of fresh air, of good drainage, of clothing adapted to the climate, of cleanliness, of sufficient light, and of well-constructed dwellings. You know too that those who are healthy and strong can in some degree help themselves in such matters. Thus, you can open your windows to admit the fresh outside air, and see that the chimney is clear for the escape of the close air of the room. You can select your own food, and see that it is properly prepared for meals. You can, if needful, filter your drinking water. You can be clean, and keep your house clean too. You are able to use your own judgment in clothing. And the avoidance of habits injurious to health rests entirely on yourselves.

It is true that many among us, from want of education, do not know the full value of pure air, of wholesome water, of cleanliness, and other matters of great importance to health. It is also true, to our shame, that such ignorance is common amongst those who ought, from their position in life, training, and general knowledge, to be better informed. Yet, as I have already said, those among us who are healthy and strong, and who understand the pressing value of the laws of health, can in some degree help themselves, set their dwellings in order, and adopt sanitary precautions for the prevention of disease. But it is otherwise with the helpless sick; and yet *they* are in dire need of pure refreshing air, of the blessed sunlight, of suitable nourishment, of being kept scrupulously clean, of a proper degree of warmth, of bed covering adapted to their wants, and of freedom from disturbing noises. Years ago, Miss Florence Nightingale noticed that, "both in private houses and public hospitals," the symptoms and sufferings usually thought to belong to the disease "are very often not symptoms of the disease at all, but of something quite different,—of the want of fresh air, or of light or of warmth, or of quiet, or of cleanliness, or of punctuality and care in the administration of diet, of each or all of these."[1]

So you see that the duties of a nurse not only include the business of making a patient comfortable, watching him, attending to his personal wants, giving medicines and food, putting on poultices, blisters, leeches, and so forth; but also the carrying out, in an intelligent manner, of the laws of health, or, in other words, arranging that the patient shall be supplied as far as possible with every condition needful and favourable to health, as an abundance of pure air, a proper amount of warmth, extreme cleanliness, sufficient light, suitable nourishment, in fact everything needful of a sanitary character.

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[1] *Notes on Nursing.*

The care of the sick—the duties of nursing—seem to come very naturally within the sphere of woman's work. As a matter of fact, almost every woman has, at one or other period of her life (it may be frequently) to take charge of some suffering relative or friend. When any member of a family is seized with illness, the duty of nursing is silently left and as quietly taken up by the women of the house. It is taken for granted that the female relatives—the mother, the sisters, or may be the wife—are the proper persons to tend the sufferer, and that "they know all about it." But how can "they know all about it" without experience and training? without being acquainted with even the simplest of the laws of health? There can be no such thing as a "born nurse." Some of you, it is true, may possess a natural fitness for ministering to the sick; some may be more gifted, have a lighter hand, a more agreeable manner, or greater tact than others; but, under the most favourable circumstances, no one can succeed as a nurse unless she cultivates to the full those gifts and talents which Providence has bestowed upon her. More than this, no woman can make a good nurse unless she possesses certain qualities of character, and goes through a course of special training. "*Six* general qualifications are needed to make a thorough nurse," says Miss Catherine J. Wood, viz. presence of mind, gentleness, accuracy, memory, observation, and forethought."[1] And the same authority remarks that these essential qualities of a woman's character are so often left out of her education that much valuable time is lost in their development during the training for a nurse's work.

As regards special instruction in nursing, Miss Florence Nightingale advises "A year's practical and technical *training* in hospital wards, under *trained* head nurses. . . . For a district nurse an additional three months' training in nursing by the poor bedside, under a trained and training district superintendent, is essential." This course of training includes lectures from the hospital professors, instruction of various kinds by trained head nurses, examinations as tests of knowledge, and a regular system of work and discipline, over which is a "trained lady superintendent, who is also matron of the hospital, and who is herself the best nurse in the hospital, the example and leader of her nurses in all that she wishes her nurses to be, in all that training is to make her nurses."

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[1] *A Handbook of Nursing.*

"A year's training," continues Miss Nightingale, "is simply teaching the nurse her A B C—teaching her how to go on learning for herself, learning to understand her doctor's orders, and to read her own experience. . . . A nurse without training is like a man who has never learnt his alphabet, who has learnt experience only from his own blunders. Blunders in executing physicians' or surgeons' orders upon the living body are hazardous things, and may kill the patient."[1]

Now, you must see from all this that the duties you propose to undertake are by no means easy. They are *very serious* duties, on the proper performance of which hang the lives of the sick you may have charge of. You cannot gain the knowledge of such duties instinctively. Such knowledge is certainly not born with you, nor does it come naturally to you; but it can be acquired only by devotion and hard work on your part; careful attention to your instructors, and attentive study at the bedside. And if you happily gain some knowledge of your duties, have you the presence of mind, gentleness, accuracy, memory, observation, and forethought,—the *six* general qualifications without which it is impossible for you to properly carry your duties out,—without which you can never make a "thorough nurse"?

As to training and instruction in your work, it is absolutely necessary. Remember Miss Nightingale's words, "A year's training is simply teaching the nurse her A B C—teaching her how to go on learning for herself." In some of our grand training institutions for nurses, such as the large hospitals, no one can obtain a *certificate* until after two, or, in some instances, three years' strict training, which includes practical instruction and work in the wards, attendance at lectures, and, finally, a test of knowledge in the form of an examination. It is only by following up such a plan of study as this that a thorough knowledge of nursing can be obtained; and it is therefore the plan which I most strongly recommend to any who think of adopting the "care of the sick" as their vocation.[2]

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[1] "Training of Nurses," in Dr. Quain's *Dictionary of Medicine.*

[2] The instruction of *Queen's Nurses* (that is to say, the nurses pro-

The greater number of you, however, no doubt have joined this class, and are eager to receive instruction as to the care and management of the sick, chiefly for the purpose of *Home Nursing*, which means the tending at home of your own relatives, members of your household, or it may be your friends, as occasion requires. Many of you are anxious to learn, moreover, for the praiseworthy purpose of being enabled to help in *District Nursing*, which means the nursing of the sick or injured poor in their own homes. "Of all employments open to gentlewomen," writes Mrs Dacre Craven, "there is none more suitable than that of a district nurse, as so much tact, discretion, and good breeding are required to introduce sanitary reforms without hurting the feelings of those who are to benefit by the change."[1]

As I have already pointed out, when any member of a family is stricken down by illness or accident, the nursing and charge of the sickroom falls to the lot of the mother or wife, the daughter or sister. The care of the sufferer is left to woman, so that she is almost to a certainty at different periods of her life brought face to face with illness—and usually in the most trying case of all—the illness of her nearest and dearest. She is quite without experience in nursing, if the family has been previously a healthy one; though eager, willing, and anxious—terribly and nervously anxious—to do her best for the invalid, she scarcely knows how to carry out the doctor's instructions, to apply poultices and other remedies, to manage the sickroom and keep it clean and sweet, to prepare proper food and get the invalid to swallow it, or to tend and watch the sufferer in the way most conductive to recovery. She may be—often *is*—devotion itself, but of what avail is affection combined with ignorance?

She has to learn her lessons in nursing slowly and painfully by experience, experience it may be of the bitterest kind, experience gained from her own blunders and mistakes, experience gained at the cost, it may be, of intense suffering, of broken health, a crippled future, or perhaps the loss of some dear one. And as years roll on, if her home is much clouded

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vided by the Queen Victoria Jubilee Institute for nursing the sick poor in their own homes) includes "at least one year's training in an approved general hospital or infirmary," with "approved training in district nursing for not less than six months, including maternity nursing," and, for country districts, "at least three months' training in midwifery."

[1] *Guide to District Nurses.*

with sickness, she may become quite skilful in the duties of nursing, ready and fitted to act in any emergency, taught as she has been in the bitter school of adversity, eagerly sought after by her friends in the hour of need on account of her gentleness and superior knowledge.

It is of course quite impossible for all women to leave their homes for two or three years in order to receive a thorough training in one or other of our great hospitals, and thus gain a sound knowledge of nursing. And again, many families in time of illness engage a trained nurse at a fixed salary to tend their sick. The poor, however, cannot afford to pay a trained nurse, neither can many others who do not belong, strictly speaking, to the "poorer classes." Moreover, many well-to-do people have a great objection to trained nurses, preferring to do the best they can without bringing a stranger into the sickroom.

I think now, from what I have said, you will easily see the greatness and the excellence of the work which the St. John Ambulance Association is carrying out. The Association offers to all women who will accept of its teaching a simple but sound course of instruction in nursing and in the laws of health. To enable you to understand such matters, it is needful for you to know something of the structure and functions of the human body, and this formed part of the *First Aid* course, which you all attended, and in which you all proved successful when tested by examination.[1]

The Association course of instruction consists of *lectures* on nursing and sanitary arrangements, and *practical teaching* as well in such matters as poultice-making, application of the roller bandage to different parts of the body, use of the thermometer, changing sheets, and bed-making. The knowledge of the pupils is tested by an examination after the course, the successful candidates obtaining a *nursing certificate* of proficiency.

The Association Nursing Course may be easily attended by those who have no wish to become professional nurses, and neither have time nor money to spare for special training in one of our large hospitals. As a matter of fact, the offer of instruction by the Association is taken advantage of by women of all ranks and positions in life, and with great benefit to themselves. Princesses of our Royal Family, titled ladies of rank, and our poorer and less fortunately placed sisters of the industrial and labouring classes alike attend the nursing classes of the Association, and are alike too in being successful in gaining nursing certificates. No less than 2556 nursing certificates have been issued during the Session of 1890–91; making a grand total of nursing certificates, issued to present date, of nearly 18,000. This will give you some idea of the work accomplished.

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[1] The Authorities (of St. John Ambulance Association) are rightly of opinion that the Advanced or Nursing Course cannot be properly comprehended unless the First Aid Course has been successfully gone through beforehand; hence a strict rule is laid down, that "No person is allowed to enter for examination in these subjects (Nursing and Hygiene) unless they have obtained the certificate of 'First Aid to the Injured.'"

Skilful and trained nurses may be inclined to ridicule and "pooh-pooh" the Association course of instruction as being insufficient and useless. But such a view is utterly wrong. The Association course is simply meant to instruct women correctly in the elementary principles of nursing, the sanitary arrangements absolutely essential to health, and the practical management of certain details of sickroom work, as poulticing, bedmaking, cleanliness, ventilation, and so forth. "It has been said and written scores of times," observed Miss Nightingale, "that every woman makes a good nurse. I believe on the contrary, that the very elements of nursing are all but unknown." The Ambulance Association offers, by its nursing course, to teach women these "very elements." "Ignorance in a sickroom is very objectionable," remarked a distinguished physician, "even when combined with any amount of family affection." The Association strives to remove this "ignorance." Suitable food for the sick, its preparation, and the way of giving it; the need of fresh pure air in the sickroom, and how to obtain it; the necessity for cleanliness of the patient and his apartment, and how to manage it; the methods of warding off infection from contagious fevers, and preventing the spread of disease; how to watch the sick, and what to report to the medical attendant; the making of poultices and applying them; the giving of medicines, the use of liniments, and the preparation of baths, —these, and similar matters, are explained in a simple way during the Association course, so that the pupils when brought face to face with disease, do not cumber the sickroom in an ignorant, trembling, and helpless manner, but play their part more calmly and more hopefully than they otherwise could do, possessing more confidence than heretofore—confidence born of their newly gained knowledge, and avoiding terrible mistakes and blunders of ignorance with all their dreadful bitterness and trail of saddened memories.

Those who have a little more time and means at their disposal can, through arrangements made by the Association, still further improve themselves in the practical work of nursing; since ladies holding the First Aid and Nursing certificates can undergo a course of practical instruction (lasting eight weeks) at St. John's House, College Yard, Worcester. In this course ladies are instructed in the washing and sponging of the sick, in changing linen, making beds, the dressing and prevention of bedsores, general attention to the personal comfort of the sick, the cleaning and dressing of wounds, the giving of enemas, the use of certain utensils required in nursing the sick, and, last but not least, sick-cooking. I trust that as many of you as possible will be able to attend this practical instruction at Worcester, which is described as a "course of instruction in District Nursing among the Sick-Poor"; for, after going through the Ambulance Association course, you cannot fail to obtain valuable knowledge in the practical details of nursing under the guidance of the "accomplished and experienced" Lady Superintendent at St. John's House, "who is herself a trained nurse of Guy's Hospital, and was formerly Superintendent of one of the District Homes of the Metropolitan and National Nursing Association, which was founded by the order of St. John."

The advantage of pursuing this Worcester course is that it not only increases your skill and confidence in the sickroom at home, but it enables you also to extend your sphere of usefulness outside the family circle, and into the dwellings of your poorer and less fortunate brethren of the industrial and labouring populations. I shall have to allude to the noble work of succouring the sick and injured poor in their homes later on, and to the method and organisation by which this much-needed assistance is given. Surely Miss Catherine J. Wood must have had this benevolent work especially in her thought when she wrote "Nursing is a grand work, and is essentially woman's work; it approaches very nearly to the daily life of the Master 'who went about doing good.'"

Ladies anxious to gain still more experience may, with the greatest advantage, apply for admittance into one or other of our great training schools for nurses. One of these is the *London Hospital* school, into which ladies are admitted for periods of three months on payment of a certain fee in advance. Similarly, in the rules of the *Royal Free Hospital*, it is laid down that "Arrangements have been made for receiving, on payment, for periods of not less than six months, a limited number of ladies desirous of working in the wards of this hospital for the purpose of acquiring practical knowledge in the nursing of the sick." Other admirable institutions, which I have not time to mention here, offer like facilities. I am not speaking now of those who adopt nursing as a profession; yet there is another reason, besides those given previously, why as many women as possible who attend the Association course should try and obtain further training of a practical kind. *In times of Peace*, as I have shown, such practical knowledge is of priceless value in the sickroom at home, and in ministering to the needs of our poorer brethren when stricken by disease or crippled by accident in their humble and perhaps overcrowded dwellings. *In time of War*, such knowledge becomes simply invaluble, as it is quite impossible for the trained nurses usually employed in the military hospitals to attend properly the prodigious masses of sick and wounded incidental to a great campaign. As I have explained elsewhere,[1] it is quite impossible to support, during times of peace, an ambulance and nursing service of sufficient numerical strength to relieve the wants of the sick and wounded during a great war, and, when the signal for war is given, it is too late to teach people how to help, carry, and nurse patients who are seriously ill or injured. The Ambulance Association is thoroughly alive to this important matter; and lists are carefully prepared of those women who have been specially trained at St. John's House, Worcester, or in some other recognised training school or hospital, from which skilled nurses could be drawn for service "should this country unhappily be engaged in a European or other war of such magnitude that aid auxiliary to the Army Medical Department would be indispensable."

I must remind you—as I did when lecturing on First Aid—that your work is quite distinct from "doctoring." The duties of a nurse and the duties of a medical man are altogether separate and different; yet the aim of both is the same—the restoring of the patient to health. The business of the medical man is to find out the kind of disease or of injury from which the patient is suffering, and then to lay down a plan of treatment which includes the giving of certain medicines; the outward application of external remedies as baths, liniments, poultices, leeches, and so forth; the use of suitable articles of food as diet, and special ways of preparing or cooking such eatables; and the keeping of the patient in bed, allowing him to get up or to go out according to the requirements of the case; all of which arrangements combined form the doctor's general plan of treatment.

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[1] *Illustrated Lectures on Ambulance Work.*

The treatment of the case being determined, and, if the disease is contagious, directions being laid down for the prevention of its spread, the business of the nurse begins. It is her duty to carry out the treatment; to give the medicine, and apply external remedies according to her instructions; to feed the patient with food and drink as directed; to keep the sickroom, bedding, the patient, and herself scrupulously clean; to see that the sufferer is comfortable, and that the room is properly ventilated and warmed; and, last but not least, to carefully watch the invalid so as to report to the doctor the incidents which occur in his absence (the progress and fluctuation of the symptoms, the onset of fresh symptoms), the accurate observation of which is very essential for the information and guidance of the medical attendant. To put it very shortly, the doctor finds out what is the matter with the patient and lays down a plan of treatment; the nurse carries this plan of treatment out, and makes the patient as comfortable as possible, thereby helping, assisting, and working with the doctor to relieve or cure the patient; and, in the case of infectious disease, to prevent other people being attacked.

Just consider, then, for a moment, the heavy and grave responsibilities you undertake in assuming the duties of a nurse. Consider the physical suffering, the anguish of mind, the lengthening out of sickness, or, worse still, the loss of life that may result from your carelessness or ignorance, from your inability to carry out the instructions of the doctor, from your want of skill in managing the invalid, or from your neglect in reporting fresh symptoms. The duties which you commence to study this evening are indeed duties of a most serious and momentous kind, requiring for their proper performance the most earnest attention as well as the best qualities of human character. It is only those distinguished women who, by their extreme skill and devotion in the nursing of the sick during many years of toilsome work, have reached the foremost place of their most noble vocation —*it is only such women* (it *can* be only such) that know the difficulties, trials, and temptations which you beginners have to encounter, and the exalted qualities of character needed to command success. And what do such as these teach you? "A good nurse," writes Miss Nightingale, "should be the 'Sermon on the Mount' in herself. . . . Sober in spirit as well as in drink, and temperate in all things. Honest, not accepting the most trifling fee or bribe from patient or friends. Truthful—and to be able to tell the truth includes attention and observation, to observe truly—memory, to remember truly, as well as intention to speak the truth, the whole truth, and nothing but the truth. Trustworthy, to carry out directions intelligently and perfectly, unseen as well as seen, 'to the Lord' *as well as* unto men,—no mere eye service. Punctual to a second, and orderly to a hair . . . Quiet, yet quick; quick, without hurry; gentle, without slowness; discreet, without self-importance; no gossip. Cheerful, hopeful. . . . Cleanly to the point of exquisiteness . . . neat and ready. Thinking of her patient and not of herself; 'tender over his occasions' or wants, cheerful and kindly, patient, ingenious, and *feat*."[1] And again, Miss Lückes, the distinguished Matron of the London Hospital, says to beginners, as you are, "You must endeavour to learn and to do as *much* as you possibly can, and not rest contented with 'as little' . . . there is simply no limit to the good you can do. Strive to see what your opportunities are, and then take care not to waste them . . . in a double sense you must 'walk worthy of the vocation wherewith you are called.' . . . Take care that every single one shall be better for coming in contact with you."[2]

"Let the work be done," writes Miss Wood, "as in the sight of God, not to win the praises of the medical staff, but as doing heartily unto the Lord that work, that great work, which he has committed into the hands of the nurse. . . . I seek to magnify my office, and I would aim at placing it on the highest level—that of Christian womanhood. I would every nurse to make it her object . . . that the name . . . should be synonymous with purity, gentleness, and uprightness."[1]

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[1] "Nursing the Sick," in Dr. Quain's *Dictionary of Medicine.*

[2] *Lectures on General Nursing.*

The remainder of this lecture may fitly be devoted to the personal requirements of

THE NURSE,

her dress, care of her own health, her manner in the sickroom, and similar matters.

It seems to me, addressing a class of ladies, that many of my audience may already know much of what I would say touching the general behaviour, manner, and tact of a nurse. Yet doubtless it may happen to some here, as it has often to others, that, though quick to note the failings of nurses both trained and untrained, you yourselves may fall into errors when the time of trial arrives.

Probably one of your chief weaknesses will prove to be *want of self-control*, in the presence, it may be, of agonising pain, mental derangement, a ghastly wound, a sudden and startling seizure, or the shadow of approaching death. A good deal depends upon temperament. Some people are by nature cool and phlegmatic, others more nervous and excitable. Yet experience and knowledge have great and beneficial influence in strengthening your power of self-control. Familiarity with the sight of suffering, of wounds and accidents and death-bed scenes cannot but lessen extreme sensitiveness; and as your knowledge of the duties, practical work, and responsibilities of a nurse extends, you gradually gain self-possession and confidence. This is of great importance, for if you are fearful or "lose your head," the patient quickly perceives it, becomes nervous, frightened, and loses all faith in you. Again, if your spirits flag from over-work or anxiety, or you allow yourself to be vexed, irritable, or sulky, the invalid, however ill, will soon notice it, and become anxious, weary, fretful, and depressed in consequence.

The sick are often peevish, difficult to please or to satisfy, and cross; but such irregularities of temper and manner, you must always bear in mind, are the natural results of weakness or disease; and you should always try to make yourselves pleasant and agreeable, under even the most vexatious circumstances in the sickroom. No matter how tired and weary you may be, no matter how anxious, depressed, worried, and sick at heart you may feel, always endeavour to look at the bright side of things, look for the silver lining of every cloud, do what you have to do in a pleasant and kindly manner, behave patiently and cheerfully—*for the sake of the patient.*

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[1] *A Handbook of Nursing.*

The sick are very sensitive to unaccustomed or startling sounds, so have a care as to the manner in which you move about and perform your many duties. Clumsy movements, heavy footsteps, creaking boots, rustling dresses, jingling keys, flapping blinds, rattling windows, banging doors, rattling of fire-irons, the perpetual scratching or nibbling of mice, loud talk, sudden ejaculations, thoughtless conversation in the sickroom or just outside of it, whispering, heavy or noisy footsteps overhead or in an adjoining room, are some of the disturbing influences in the sickroom, which are far more common than you may imagine. Some people seem ever working at high pressure; whatever they do is done with a rush and a scuffle, the upsetting of a chair, or may be the breaking of a saucer, and so the patient is continually disturbed and excited. Others are almost as annoying from their slowness and sleepy way of doing their work. There are yet others who have an idea that the essence of nursing depends on moving about unnaturally in a noiseless and ghostly manner, and so disturb, excite, and irritate the patient by appearing here and there unexpectedly amid quite unnatural stillness.

All such extremes of behaviour should be carefully avoided. Prompt and ready of action you must be, but you can surely be quick without excitement and hurry. Calmness and self-possession come from experience and knowledge; and a calm self-possessed nurse combines promptness and readiness of action with a quiet and decided, yet gentle manner.

The quality of *decision* with gentleness, *firmness* with kindness, is very requisite for a nurse. It goes without saying that she should be gentleness and kindness itself to the patient, yet it is needful for her to possess a quiet resolution and decision. The patient trusts and looks to her for help and assistance. Let her show any irresolution, however, any want of decisiveness, and the patient distrusts her at once, loses faith in her, fears he is leaning on a broken reed. A halting manner, hesitation in advising or assisting the patient you should therefore carefully avoid. Lack of decision is sometimes shown in an irritating way by the manner in which the nurse (and others) leave or enter the room. If you are going out of the sickroom, *go out;* if coming into it, *come in* promptly and quietly. Do not stand in the doorway half in and half out of the room in a sheepish or apologetic sort of way, nervously fiddling with the handle, or making some purposeless observations. Doors are made to shut, so pass through them gently, speedily; then close them quietly—without a bang.

Your *conversation* should be quiet and cheery. On no account indulge in talk about "shop." Accounts of operations, descriptions of bad cases, have a sickening effect on those who are ill: your amiability, handiness, and nursing skill should be the proofs of your worth, not foolish gossip about past experiences. Neither should you chatter about the patient's symptoms within his hearing (unless answering questions of the doctor); and surely common-sense ought to guard you against speaking gloomily and unfavourably of the invalid's chances in his presence. As to the subjects of conversation, Miss Nightingale gives some hints, which I think may be very valuable to you. She says, "A sick person does so enjoy hearing good news: for instance, of a love and courtship, while in progress to a good ending. If you tell him only when the marriage takes place, he loses half the pleasure, which God knows he has little enough of. . . . A sick person always intensely enjoys hearing of any *material* good, any positive or practical success of the right . . . do, instead of advising him with advice he has heard at least fifty times before, tell him of one benevolent act which has really succeeded practically, it is like a day's health to him. . . . They don't want you to be lacrymose and whining with them, they like you to be fresh and active and interested. . . . There is no better society than babies and sick people for one another. . . . It freshens up a sick person's whole mental atmosphere to see 'the baby' . . . If you knew how unreasonably sick people suffer from reasonable causes of distress you would take more pains about all these things. An infant laid upon the sick-bed will do the sick person, thus suffering, more good than all your logic. A piece of good news will do the same."[1]

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[1] *Notes on Nursing.*

There are a few precautions you should bear in mind when talking with the sick. Sit in full view of the patient, so that he has not to turn his head in order to see you; and be moderately near to him, so that he can hear you readily and have no need to raise his own voice. Do not interrupt the sick person if he is otherwise engaged, for instance, taking his food, falling off to sleep, walking about the room, or standing up. It is by no means an easy matter for the healthy to do two things properly at the same time; it is a *dangerous* and cruel experiment to force on an invalid. Interrupt his first doze, and you spoil his night. Interfere with his meal, and he may choke. Talking, eating, and choking are not unfrequently associated at the ordinary table. The most risky thing, however, is to talk to a weakly patient, all of whose feeble powers are strained and concentrated in an effort, to stand, walk or move from place to place; an ugly fall or sudden illness may likely enough result from such unwise interference.

The above remarks apply equally to the conversation of *visitors*, who are only too apt to neglect the simplest precautions; but I shall have to refer to these later on.

Obedience to instructions is a very essential qualification of a nurse. *Can you obey?* is a question I put in all seriousness to each one of you. If not, better by far not attempt to undertake the care of the sick in any capacity, public or private. Always bear in mind how you stand in regard to the medical attendant. *He* arranges and lays down the treatment—*you* carry it out by *obeying his instructions.* You work together towards a common good, but on different lines. Always act loyally towards the medical man, work out his treatment to the best of your ability, help him by informing him of incidents which you deem important, and encourage the patient to have confidence in the efforts and good faith of the doctor. Criticism on your part of the treatment laid down by the doctor only renders you ridiculous, since you talk about matters of which you do not know—and *cannot* know—anything whatever.

To carry out your instructions properly you must possess *punctuality* (for the food, medicines, &c., must be given exactly at the hours named); *accuracy*, for doses must be given in correct quantities, and observations of the patient's temperature, and his symptoms must be correct too; *good memory*, so as to remember what you observe, and what you have to do; and *truthfulness*, so that your report of the patient's condition may be, as far as it goes, trustworthy. The best make mistakes sometimes, but it is surely better to acknowledge such mistakes truthfully than that the patient should be placed in peril to save your own reputation. If you cannot own to an error when you know you have committed it, you have not the moral courage to make a nurse.

Much more might be said touching the necessary qualifications of those who have the care of the sick intrusted to them. I have told you enough, however, to illustrate Miss Nightingale's remark that *A really good nurse must needs be of the highest class of character.*

The *dress* of the nurse requires attention. It should be neat, clean, pleasing, and of such material and make as neither to create noise nor retain dust, organic matter, or infection. Silk dresses are to be avoided (on account of the rustling), as are also heavy, slipshod, creaking, and high-heeled boots (because noisy), and useless or extreme ornamentation (which is both unsuitable and in the way), and long skirts and flounces (being liable to catch different articles of furniture, get under the feet, sweep the floor of dust, and harbour dirt and infection). "Chatelaines are going out," the editor of *The Hospital* observes, "because they jingle, and neat leather cases or sabretasches are worn, slung from the belt." The material of the dress should be washable, and not such as will easily harbour or take up dust, dirt, organic matter, or infection. Cotton, zephyr, print, holland, piquet, galatea, and gingham are suitable materials, and find a place in many nursing uniforms. The editor of *The Hospital*, assisted by others, arranged last year a remarkable Exhibition of Nursing Uniforms; I have the catalogue before me, which is descriptive of over seventy uniforms, worn at as many different institutions. In connection with this exhibition there was published in *The Nursing Supplement* of *The Hospital*, 11th January, 1890, an interesting article on "The Rights and Wrongs of Nursing Uniforms." The following extracts from this article may be useful to some of you:—"The general opinion is growing in favour of cotton frocks for the sisters . . . . . If a good thick cotton is used—not cheap rubbish—there is no reason why cotton should not be worn all the year round. Blue is found to wash well if not too dark, and the new deep red which Liberty introduced is a good wearing colour . . . . The necessity for all engaged in hospital work to wear washing materials is now recognised; but there are some woollen materials which wash excellently—for instance, the gray uniforms of the Army Sisters, and the brown religious dress of the East Grinstead Sisters. Still the preference should be given to cotton materials . . . . The late exhibition of uniforms fully demonstrated that there is not the slightest difficulty in designing a nursing dress, which should at once be useful and beautiful."[1] Then again, "With regard to caps, those tying under the chin, and those with long tails down the back, may be very dignified, but they are not comfortable; strings under the chin in hot weather add to the heat and seldom keep tidy. Very high caps with Cash's frilling neatly goffered are becoming, but the plain muslin triangular caps are most easily washed." Then as to aprons, which should come nearly to the bottom of the dress and reach well round behind, these "should always be white . . . . nothing looks so nice or wears so well as a white linen apron,"—and there should always be a large and serviceable bib held up by straps crossing behind, as even safety pins ought not to be a necessity in a working woman's costume."[2]

The collar and cuffs should be of spotless white linen, and by way of variety you might wear the medallion of the Ambulance Association (Fig. 1) on a bright coloured ribbon around the neck. It is becoming more customary now for nurses to wear some kind of badge. Under some circumstances loose sleeves, which can be drawn on and tied above the elbow, are useful. A pincushion and scissors are often needed, and may be hung at the side or carried in a leather case or sabretasche with other useful articles; but chatelaines are not recommended.

Lastly, extreme neatness and cleanliness of dress is requisite; the cap, apron, bib, handkerchief, collar, cuffs (and sleeves, if used), should be pure white and spotless.

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[1] Where no special dress or uniform has been yet adopted, Mrs. Dacre Craven recommends either the brown holland or linen "wrapper," buttoned down the front, which can be worn over any dress, and changed in a minute (*Handbook for Hospital Sisters*); or brown holland "dresses" with aprons of the same material (*Guide to District Nurses*).

[2] "Pockets in nursing aprons or cloaks are very undesirable," Mrs. Dacre Craven says, "as they sometimes carry infection, and it is difficult to keep them free from dust and fluff. Two pockets, if desired, can be made in the dress, and the apron over them will keep them clean" (*Guide to District Nurses*).

A nurse must be careful to attend to her own health, otherwise a breakdown will certainly take place. Amateur nurses, while anxiously engaged in attending to sick relatives, are very apt to forget this, and their health in consequence not unfrequently gives way. It is quite unreasonable to expect any woman, trained or untrained, to act as nurse day after day, and often in the night time, in anything like an arduous case, just as though she was a piece of machinery. She needs, like other people (more than a great many), *proper food*, a certain amount of *restful sleep*, *exercise in the fresh air*, and *plentiful ablutions.*

THE ST. JOHN AMBULANCE ASSOCIATION

Fig. 1.—Medallion of the St. John Ambulance Association.

The *food* should be wholesome and nourishing, taken at regular intervals, as far as is possible; and *not* in the sick-room. During *day* duty the meals can usually be arranged with little trouble; and it is found that *night* nurses can, with method, be as easily supplied with food according to their requirements. It may be useful to glance at the arrangements in regard to such matters as carried out in our large hospitals and training institutions. One or two examples will be sufficient:—

HOSPITAL A

	Breakfast.	Luncheon.	Dinner.	Tea.	Supper.
Day nurse	6.30 A.M.	10.15 A.M.	2 P.M. (1 hr.)	5 P.M. (½ hr.)	8 P.M.
Night nurse	7.30 P.M.	12 midnt. (*Meat tea*)	8.30 A.M.	11.30 A.M. (*Light refreshment before going to bed, for those who wish it*)	

HOSPITAL B

	Breakfast.	Dinner.	Supper.	
Day nurse	6.30 A.M.	12.45 to 1.15 P.M.	9.30 P.M.	Sufficient time is allowed for tea also at a convenient hour.

	Supper.	Dinner.	
Night nurse	8.50 P.M.	10 A.M.	With a substantial meal at a convenient hour between supper and dinner.

Meals for day nurses are naturally much the same as are partaken of by other people in regular work, and you will have no difficulty therefore in falling in with the day arrangements as to your food. You may find it harder perhaps to accommodate yourselves to the alteration in your meals needed for night duty, but with a little experience you will soon become reconciled to it. Miss Nightingale lays it down that night nurses "must have hot meals prepared for them when they come off duty in the morning and before they go on duty at night, besides breakfast at 1 or 2 A.M.;"[1] and, though the meals are called by different names, you will see that such an arrangement is practically carried out in the two hospitals just mentioned (A and B).

Miss Lückes informs me that without doubt the best plan for night nurses is to have a substantial meal like dinner *as soon as possible after coming off duty*, care being taken not to spoil the appetite by taking any small meal too nearly approaching the dinner hour. If the dinner hour is later, the fatigue due to a long night's work leads to a desire for tea, unsuitable food, or stimulant of some kind, and so by the time dinner is served all appetite is lost.[2]

As regards *sleep*, the nurse needs about seven or eight hours in the twenty-four; let us see the arrangements as to this point in the two hospitals alluded to:—

HOSPITAL A

Day nurse goes to bed at 10.30 P.M.; breakfasts at 6.30 A.M.
Night nurse „ before 12 noon; „ 7.30 P.M.

HOSPITAL B

Day nurse goes to bed at 10.30 P.M.; breakfasts at 6.30 a.m.
Night nurse „ 1.30 P.M. in *winter*, rises at 8.15 P.M. in *winter*.
„ 11 A.M. in *summer*, „ 6 P.M. in *summer*.

You see in these cases both day and night nurses get about seven hours' undisturbed sleep.

As regards *out-door exercise*, the nurse needs not less than one or two hours, on the average, every day; and further, a *holiday* of not less than a month's duration each year. Glancing at the regulations on these matters before me, I find—

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[1] "Nursing the Sick," in Dr. Quain's *Dictionary of Medicine*.

[2] "The nurse often drinks tea to sustain her when there is no appetite for food, until utter exhaustion is the untoward result, and a state bordering on the delirium tremens of alcoholic excess is revealed."—*Manual of Dietetics:* Dr. Milner Fothergill.

Hospital A

Day nurse is allowed leave of absence for twelve hours during each week (to be taken at such times as are most convenient to the working of the hospital), and not less than one day's holiday every month. Annual leave—three weeks.

Night nurse is allowed leave of absence from 9 A.M. to 11.30 A.M., and also a day's holiday and the following night off duty every month. Annual leave—three weeks.

Hospital B

Day nurse off duty two hours daily, or the equivalent to that amount during the week. Entitled also to every fourth Sunday off duty from 9 A.M. to 10 P.M., and a half holiday from 1.30 P.M. to 10 P.M. every month. Also a week's holiday twice a year, or a fortnight at the end of the year as the matron can best arrange. Half an hour's absence is permitted from the wards after the early morning work, providing they return by 9.30 A.M.

Night nurse off duty two and a half hours every day in summer, and two hours in winter; also entitled to be off duty once a month from 10.30 A.M. to 1 P.M. the following day in winter, and from 10.30 A.M. to 11 A.M. the following day in summer. Also a week's holiday at the end of six months, or two weeks at the end of the year.

The *District Nursing Associations*, which are formed for providing trained nurses for the poor, as a rule only arrange for *day* nursing; each nurse being required to work daily eight hours (or thereabouts) in her district, and allowed at least two hours' leisure every day, and the evenings entirely at her own disposal when possible; also a month's holiday in the year.

Frequent washing of the hands and face, and *baths* are very necessary for a nurse. Such measures are needful for health, for protection from contagion, for the prevention of sores and cracks on the hands from being poisoned by discharges of wounds, &c.; and, besides being positively requisite, plentiful ablutions are very refreshing, and tend to render a nurse more agreeable to the patient.

A cold bath (or, if this cannot be borne, a tepid one) taken daily has a very refreshing and strengthening effect; but for cleanliness, a good warm bath with free use of soap *at the very least* once a week is desirable.[1] Under some circumstances it may not be convenient to take baths, there being no arrangement suitable for the purpose; and, besides, some persons do not derive so much benefit from cold baths as others. But a nurse can always clean herself thoroughly by dipping a corner of a rough towel in some hot soap and water and rubbing her whole body down from head to foot, and this kind of process can be easily managed every day.

The teeth should be cleaned and the mouth well rinsed on rising, and also after every meal. The hands should be washed frequently, kept smooth and soft by occasional application of glycerine, and the nails cut evenly and close. You must always be especially careful about the slightest scratch, sore, wound, abrasion, or prick on your fingers or hand, otherwise the sore place will certainly become poisoned by the entrance of dirt or foul matter, the result being either inflammation of the parts, abscess, or general blood-poisoning. Hence a little want of precaution and cleanliness may likely enough cause you much suffering, serious illness, the loss of a finger or arm, or possibly your life. When you detect any little sore or abrasion, carefully wash it thoroughly with warm water and carbolic soap, paint over it a little collodion (which forms a thin film on drying and so protects the part), and lastly apply some impervious covering such as an india-rubber finger-stall, or, failing that, a piece of good sticking-plaister. For the more offensive or disagreeable details of nursing, in which the hands are much soiled, such as "internal cases," fill the nails with soap (preferably *carbolic* soap), smear the fingers well with carbolic oil (1 in 20), and always after such work, indeed always after handling or touching the sick for any purpose, carefully wash your hands in warm water with soap (*carbolic* soap in preference), and dry your washed hands on towels set aside for the purpose.

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[1] "Every nurse should make it a rule to wash herself thoroughly with *hot* water at night, and to take a cold sponging bath in the morning."—*Guide to District Nurses:* Mrs. Dacre Craven.

As regards general precautions, the following excellent rules, laid down by Miss Nightingale, should be adopted by you whenever practicable:—"Immediately *before* beginning any dressing, and in every case *after* touching the patient, whether in dressing wounds, rubbing in applications, administering enemata, internal syringing, washing out eyes, ears, nose, mouth—dip the hands into watery solution of carbolic acid (1 to 80), and then wash hands and nails carefully with carbolic soap. 'Dressing forceps,' or syringe, or whatever is used, to be dipped in solution of carbolic (1 to 80) *before* use as well as *after*. The teeth and joints of the 'dressing forceps' to be brushed clean. . . . Oil the tube or nozzle, &c., to be used for any internal application with carbolic oil (1 in 20). Otherwise the appliance used might convey contagious matter from one patient to another.

"Always use two basins in washing wounds, so as not to dip the fingers in dirty water."[1] Never, under any circumstances, remove the dressings from a wound or sore with your fingers, but with dressing forceps (Fig. 2); and when engaged in such work be careful not to rub your eyes with your hands (or you may poison them); neither use towels for drying (after cleaning) your hands other than those set aside for the purpose; nor, when you can avoid it, inhale the breath of the sick or any disagreeable smell. In some instances you cannot help doing this, and it is then advisable to rinse out the mouth and gargle the throat with water mixed with a little Condy's Fluid.

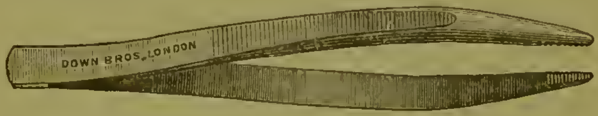

Fig. 2.—Dressing Forceps.

Lastly, avoid performing any portion of your toilet in the sickroom; arrange so that any brushing of hair that is needed, cleaning of teeth, cutting of nails, cleaning of hands, &c., is managed apart from the sick.

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[1] "Nursing the Sick," in Dr. Quain's *Dictionary of Medicine.*

LECTURE II

THE SICKROOM—VENTILATION, WARMING, AND LIGHTING

Selection of sickroom; its position and aspect—Urgent need of good ventilation for the healthy and especially the sick—Sources of impurities in air—Diseases arising from impure air—Amount of fresh air needed hourly by the healthy and the sick—Room-space and floor-space—Ventilation, natural and artificial—Ventilation of rooms—Outlets—Inlets—Draughts—How to test air of rooms—Temperature of room—Thermometer—Regulation of heat—Fireplaces—Ventilating grates and stoves—Close stoves—Artificial lighting: Gas, candles, oil, night-lights, electric light—Floors—Carpets—Walls—Ceilings.

In hospitals, and other specially constructed places for the reception of the sick and injured, there are wards or rooms ready for immediate use, and trained nurses in attendance prepared to care for the patients at once on their admittance. It is far otherwise, however, with our private dwelling-houses. A serious illness or a bad accident is usually as unexpected as it is unwelcome; too often indeed it is startlingly sudden and alarming—truly a "bolt from the blue." And so it happens that, alike in the mansions of the rich and the small cottages of our poorer brethren, there is rarely a room in a fit state of preparedness to receive an invalid, and rarely, too, any in the house who can take care of him, minister judiciously to his wants, place him in the conditions most favourable to his relief and recovery—in a word, *nurse* him.

Now, the choice of a room in which to place and tend a sick or injured person—in other words, the *selection of a sickroom*—is not quite so simple a matter as may at first appear.

There are several important points to remember when considering the most suitable *position* of the room. If the patient is suffering from a contagious disease (such, for instance, as *Scarlet Fever*), the room should be in the uppermost story, because, if placed lower down, the effluvia and infection—which tend to rise upwards—may attack the occupants of the higher rooms. In such a case, indeed, it is always best to give up the whole of the top story to the Fever-stricken patient and his attendants.

On the other hand, cases which are *not* contagious are often better placed lower down in the house, so as to avoid the extra toil involved in perpetual running up and down long stairs during attendance on the invalid.

Then again, the room should be so situated that the patient shall be neither disturbed by noises nor sickened by disagreeable smells. Thus, you should not, if possible, select a room facing a busy street or otherwise exposed to the roar of traffic, nor should you choose a room close to a nursery of playing, romping children, nor yet one under an apartment occupied by noisy or heavy-treading people, nor one over a kitchen or likely to be penetrated by the smell of cooking. Lastly, avoid a room, the air of which is pulluted by the vapours from dirty sinks, poisonous sewers, leaky drains, foul stables, and offensive backyards. Your sense of smell, as you walk straight into a room from the pure outside atmosphere, will stand you in good stead here, and help you to detect such pollutions.

The *aspect* of the room is another matter of importance, since sunlight is very needful for the sick; so the room should face south or south-west. In the case of a larger apartment, or hospital ward with windows on opposite sides, the best aspect "is north-west and south-east, the maximum of sunlight without excess of heat being thus obtained, the windows on one side getting the morning sun, the mid-day or hottest sun striking the ward obliquely, and the windows on the opposite side getting the afternoon sun."[1]

The proper *lighting* of rooms by *day*-light and *sun*-light is important, so, besides a certain aspect being needful, the windows should be of sufficient size to admit sunlight some part of the day into all the occupied rooms of a house. Light is not only agreeable and cheering, but is positively essential to health. "*Where the light cannot come the doctor must.*" The occupants of dark rooms suffer from bad sight, from poorness of blood, and become depressed and feeble in health. If light is needful for the healthy, however, it is still more so for the sick.

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[1] *Cottage Hospitals:* Henry C. Burdett.

"It is the unqualified result of all my experience with the sick," says Miss Nightingale, "that second only to their need of fresh air is their need of light; that, after a close room, what hurts them most is a dark room. And that it is not only light but direct sunlight they want. . . . Go into a room where the shutters are always shut (in a sickroom or a bedroom there should never be shutters shut), and though the room be uninhabited, though the air has never been polluted by the breathing of human beings, you will observe a close musty smell of corrupt air, *i.e.* unpurified by the effect of the sun's rays. The mustiness of dark rooms and corners, indeed, is proverbial. . . . Where is the shady side of deep valleys there is cretinism. Where are cellars and the unsunned sides of narrow streets, there are the degeneracy and weakliness of the human race—mind and body equally degenerating."[1]

Then, too, the room should be *spacious* and of good height, with a *fireplace* and *chimney in proper working order*, and a *good-sized window which opens top and bottom.* Do not be satisfied by simply noticing the presence of a fireplace and smoke flue, but see that it is not blocked up by boarding, nor the chimney stuffed up and choked with straw or old newspapers; and when you have got so far, find out whether the fire can burn without smoking. Similarly, be careful to test the window, and see that it opens and shuts easily, and that the hasp and cords of the window work smoothly and without a hitch. These matters are of extreme importance, for without careful attention to them you can never hope to keep the air of your sickroom pure; and, as Miss Nightingale so forcibly puts it—"The very first canon of nursing, the first and the last thing upon which a nurse's attention must be fixed, the first essential to the patient, without which all the rest you can do for him is as nothing, with which I had almost said you may leave all the rest alone, is this: To KEEP THE AIR HE BREATHES AS PURE AS THE EXTERNAL AIR, WITHOUT CHILLING HIM."[2]

Of such great importance is this part of your duty to the sick that I must ask for your closest attention during the remainder of this lecture while I try to explain to you how best to keep the air of rooms pure and fresh, and at the same time sufficiently warm.

[1] *Notes on Nursing.* [2] *Ibid.*

VENTILATION AND WARMING.

You know how soon a room gets stuffy, close, and disagreeable, when it is overcrowded with people; and this is particularly the case when the windows are closed, or if there is no fireplace, or if there are gas-lights, lamps, or even candles burning in the room. This is so because of the impurities given off by our bodies, by our breath, and in some measure by our skin, which mingle with the air, *rendering it impure, and what you call "stuffy" or "close."* Let me remind you here of what you were taught during your First-Aid course, about breathing or respiration. You breathe about fifteen or sixteen times in a minute; and each time that you breathe you draw air into your lungs (or *inspire*), and then force the air out of your lungs (or *expire*). *From* the air drawn into your lungs the goodness of the air—the *oxygen*—passes *into* your blood; for, besides food and drink taken by the mouth, oxygen is needed by the breath to keep the machinery of the human engine in working order. *Into* the air forced out of your lungs passes watery vapour with carbonic acid and poisonous organic matter *from* your blood; for the decaying refuse and waste of your bodily machinery must needs be thrown off and got rid of, or the human engine would surely stop working. In a much less degree, particles of refuse matter are thrown off from the skin, with watery vapour which passes off all the time so gradually that you do not notice it, but occasionally is so copious that you *do* see it as sweat or perspiration.

And so it comes to pass that, as long as you live, you are continually robbing the air of its best part—its oxygen, and as constantly polluting it by pouring into it the carbonic acid and putrefying refuse from your bodies. In the open air this does not matter, since the foulness thrown off by the lungs and skin so mingles with the fresh atmosphere around and is so dispersed by the winds that no harm results. The rain, too, carries with it impurities from the air as it falls. The green leaves of our trees and plants in the daytime absorb carbonic acid and give off oxygen; and the oxygen of the air itself constantly exercises a purifying effect. Thus it is that the outside atmosphere (if not kept confined and stagnant by closely-built houses and narrow streets) is kept pure, fresh, and wholesome, the very "breath of life"—in spite of the pollution thrown off by our bodies, the smoke and impurities from fires, the smells from cesspools, sewers, middens, and refuse, and the poisonous vapours from kilns and manufactories.

In the rooms of dwelling-houses, the wards of hospitals, public halls and assembly rooms, workshops and factories, it is very different. The air of the room is constantly polluted by the breath of the occupants; and too often also by poisonous vapours entering through the door or windows from drains, middens, foul backyards, and badly-kept streets and thoroughfares; by all kinds of impurities spoken of as "dust," which clogs and tarnishes the furniture, walls, hangings, floor, and ceiling; and by the filth-laden carpet, soiled by the tread of many dirty boots.

The *dust*, as you call it, in rooms is made up of a great variety of things,—delicate fluff and fibres from handkerchiefs, clothes, and other fabrics; particles of skin, charred wood, food, coal, hair, with, it may be, the germs of disease; poisonous arsenical dust from green wall paper, or filth brought indoors by dirty boots.. The air of workshops, factories, and mines usually contains, in addition to such matters, a vast amount of gritty, fluffy, or other irritating dust, varying in nature according to the particular industry, but generally speaking very injurious to the health of the workmen.

The air of hospital wards aud sickrooms especially soon becomes foul from the large amount of offensive organic matter and effluvia thrown off by the breath, bodies, and discharges of the sick; and it is still further polluted by the discharges from wounds and abscesses, the poultices, dressings, and, where there are contagious cases, by the infection given off in the breath, particles of skin, secretions, and discharges of the sick.

The evil is increased as darkness comes on, because of the need for artificial lighting; since the burning of gas, candles, or lamps still further robs the air of its oxygen, and poisons it still more with additional carbonic acid and other impurities. "It is calculated," says Professor Corfield, "that two sperm candles or one good oil lamp, render the air about as impure as one man does, whereas one gas burner will consume as much oxygen and give out as much carbonic acid as five or six men, or even more."[1] (Gas, too, markedly increases the heat of the room.) It is very necessary, therefore, that the air of our rooms should be often changed, in other words, that there should be good *ventilation*,—which means the sweeping away of the foul air of a room by the passing into it of fresh air. If from any cause, ventilation is not sufficiently carried out, the occupants of the room breathe air polluted by their own bodies, and suffer in consequence. In extreme instances, as where there is reckless overcrowding in a badly ventilated room, the air becomes so foul as to be actually poisonous and deadly in a short time. Thus, of 146 people shut up in the Black Hole of Calcutta (which is described as measuring only eighteen feet each way, with but two small windows on one side), 123 were found dead the next morning, the remainder being seriously ill; and of 300 Austrians put in a close and small prison after the battle of Austerlitz, 260 quickly died.

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[1] *Dwelling Houses.*

You know yourselves from experience that the effect of stopping for a few hours in a close, overcrowded, and stuffy room is to give rise to headache, a feeling of heaviness, sometimes faintness or sickness, and a desire to escape as soon as possible into the fresh cool air outside. Persons who are forced by their occupations to spend most of their time in close and stuffy offices, rooms, or workshops, become pale, languid, out of spirits, feeble, weakly, and altogether lowered in health; and, as you would naturally expect, such people are more subject to disease—and more likely to be attacked by it than others. As a matter of fact, it is found that those who earn their living in the open air, such as fishermen, gardeners, and farmers are far more healthy than people following in-door occupations.

Persons who spend much of their time in a close and foul atmosphere suffer far more than others from *Consumption* and other lung diseases. The soldiers of our army, for instance, suffered formerly much from *Consumption*, even those troops who were stationed abroad in the healthiest and best climates. Now, since the accommodation and ventilation of the barracks have been improved, the disease has very greatly lessened. It is also recorded that in South Afghanistan, during 1880–81, those soldiers who spent the winter in tents remained free from *Inflammation of the lungs*, "whilst the disease was prevalent among the infantry who were overcrowded in barracks."[1] Further, one company "quartered in large airy rooms" had no case. Again, passing to civil life, it is found that there is a higher death-rate than usual from diseases of the lungs, *Consumption* and *Diarrhœa*, among "the inmates of back-to-back houses, in which there can be no through ventilation and circulation of air;" and that the streets most infected with *Consumption* in Manchester and Salford are "also the most confined and ill-ventilated, and that the larger proportion of these deaths take place in the cave-like back-to-back dwellings."[1] It is well known, moreover, that in badly ventilated dwellings, the contagious Fevers (as *Scarlet Fever*, *Measles*, *Smallpox*, and especially *Typhus*) spread with much greater rapidity and with greater virulence.

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[1] *Parkes's Practical Hygiene:* Notter.

Persons employed in those industrial occupations in which much irritating dust or grit is given off, suffer much from breathing the air laden with such particles. Thus Cornish or tin miners, who breath an atmosphere full of sharp gritty dust, suffer dreadfully from lung disease—two thirds of the death-rate among them being due to this cause. Next to the Cornish miners, the earthenware manufacturers suffer most, on account of the fine dust which they inhale giving rise to *Bronchitis*, *Asthma*, and other lung diseases. Similarly, file-makers, cutlers, quarry-men, cotton and wool manufacturers, and others belonging to different dust-breathing occupations, are affected more or less with diseases of the lungs.

Unless every precaution is taken, the air of hospital wards and sickrooms becomes so foul as to aggravate the diseases from which the patients are suffering, and unduly to prolong recovery from them. Moreover, when a certain degree of pollution of the air is reached, *Erysipelas* makes its appearance, or in extreme cases a form of mortification called *Hospital Gangrene*.

In any case, the evils of bad ventilation are rendered still worse, as I have already explained, by the use of gas, lamps, and candles for lighting purposes, the foulness of the air and (especially by gas) the heat of the room being thereby increased. The advantage of the electric light is that it neither robs the air of its oxygen, nor pollutes it with carbonic acid or other impurities, and only raises the heat to a trivial extent.

From all this, you surely see the necessity of good *ventila-*

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[1] *Hygiene and Public Health:* Dr. Louis C. Parkes.

tion, that is, in other words, the need of sweeping away the impure air of your rooms (and especially of *sick*-rooms) by the passing into them of fresh air. A good rule for you to remember is—*Try to ventilate your rooms so well that any person walking in direct from the pure atmosphere outside may not notice any difference as regards freshness or disagreeable smell.* The organic matter given off during health in the breath, and thrown off so freely in several ways from the bodies of the sick, has a peculiarly offensive odour; so that as such impurities collect in the air of a room, the latter gets stuffy, close, disagreeable, and lastly, most foul and offensive. An experienced person, on coming straight into a room from the outside air, can, therefore, immediately tell if the air of the room is impure, if the ventilation is insufficient, by his sense of smell. But it is necssary to walk straight into the room, without loitering about, from the outside atmosphere, or the power of detection by smell becomes a little deadened.

Now, it is found that, on the average, every person in a room must be supplied with not less than 3000 cubic feet of pure fresh air each hour, or the air becomes impure and close. It would only weary and perhaps confuse you to explain how this has been found out, so please take what I say without further explanation—that each *healthy* individual needs a supply of at least 3000 cubic feet of fresh air every hour. The *sick* require more, at least 4000 cubic feet every hour, as the air is fouled more rapidly by those who are ill: indeed, in many cases, too much air cannot be allowed.

This leads up to the question as to how much room space should be allowed for each occupant. Take, for instance, a room 10 feet high, 10 feet long, and 10 feet broad, which, therefore is 1000 cubic feet in size. Suppose one person lives in this room, then, in order that he may be supplied with the necessary 3000 cubic feet of fresh air every hour, the air of the room must be changed 3 times each hour. Suppose two persons lived in this room of 1000 cubic feet; that would be 500 cubic feet of room space for each individual. As each occupant needs 3000 cubic feet of fresh air every hour, then 6000 cubic feet would be required for the two individuals in the room, or in other words, the air of the room would require changing six times in the hour. But, in this climate of ours, the air of a room cannot be changed more than three (or at the most four) times in an hour without making a draught which cannot be borne by the occupants. So that, you see, in order that every individual in a room may receive his 3000 cubic feet of fresh air in each hour, without being exposed to draughts, he must be allowed 1000 cubic feet of room space (so that the air may be changed only three times in the hour), or at the very least 750 cubic feet of room space (the air being changed four times in the hour). As a matter of fact, however, the expense of constructing rooms of sufficient size to allow 1000 or even 750 cubic feet of space to each occupant is too great for most people. As regards our soldiers, for instance, it is stated on the best authority that "it has been found very difficult, without incurring greater expense than the country could bear, to give every man even the 600 cubic feet" which is now the authorised regulation space. In common lodging-houses, only 240 cubic feet is insisted upon for each occupant; and in workhouses, 300 cubic feet is allowed for every healthy person in the sleeping rooms. "In the crowded rooms of the artisan class," wrote one eminent authority, "the average entire space would probably be more often 200 to 250 cubic feet per head than 1000 . . . but, after all, the question is, not what is likely to be done, but what ought to be done ; and it is an encouraging fact that in most things in this world, when a right course is recognised, it is somehow or other eventually followed."[1]

The offensive organic matter thrown off by the breath and otherwise from our bodies does not mingle readily with the air, nor does it float upwards, but, on the contrary it hangs about like a cloud low down in the room. Therefore in calculating cubic space for the occupants of a room, it is no use taking into account any height above about 12 feet, as extra space above that level will be no assistance in purifying the air; but for the same reason, it is very important that each occupant is provided with a fair amount of floor space. And the rule is that the floor space should equal about one twelfth of the cubic space.

The *sick*, as I have said, require 4000 cubic feet of fresh air each hour, so for the air of the sickroom to be changed three times in the hour, there should be allowed about 1300 cubic feet of room space for each sick person. The floor space for each patient should be at least a twelfth of the room space, which gives about 100 square feet for each of the sick ; for it is extremely important that there should be room for the nurses and attendants to act between the beds, also that the patients should be separated from each other as widely as is possible. As a matter of fact, it is advisable to construct hospital wards so as to give 100 or 120 square feet of floor space, and from 1500 to 2000 cubic feet room space to each patient. In hospitals for infectious cases, it is laid down that each patient is to have 144 square feet floor space, and 2000 cubic feet room space.

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[1] *Parkes's Practical Hygiene :* Notter.

Now that you have an idea of the size of a room, the extent of floor space, and the frequency with which the air of the room should be changed, so as to afford the occupants (healthy or sick) a proper supply of fresh air, it is necessary to inquire *how* the air of the room may be changed, *how* the foul air can be driven out by the passing in of fresh, in other words, *how ventilation is carried out.* Movement of air occurs naturally in three ways. *First,* the impure air of the room tends to mingle through any crevices or openings, through even brick and stone (if not covered by plaster and paper) with the fresh air outside. But though the carbonic acid passes away to some extent in this manner, yet the poisonous organic matter thrown off by the breath hangs about the room in clouds, and is not moved by this mingling (or *diffusion*) of the inside with the outside air. *Second*, the *action of the wind* changes the air of rooms very effectually if it gets through windows, doors, or other openings. It is stated that "air moving only at the rate of two miles an hour (which is almost imperceptible), and allowed to pass freely through a room 20 feet broad, will change the air of the room 528 times in one hour."[1] Hence the advantage of having large rooms and wards provided with windows in the opposite walls, which will open at the top, and allow the wind to blow right through. Wind acts, moreover, in another way: by blowing across the tops of chimneys it causes an up-current of air in them, thereby drawing the impure air from the room into the outer atmosphere. It will not do to depend solely on the winds for ventilation, however, seeing that the air may be almost stagnant and motionless, or, on the other hand, the wind may be boisterous and productive of unbearable draughts: it may blow too down chimneys and so hinder ventilation. Under certain conditions, wind is of special use, as in vessels; large tubes with

[1] *Parkes's Practical Hygiene ;* Notter.

broad cowls at the top are placed facing the wind, which blows down the tube into the various cabins and compartments. *Thirdly*, the air of a room becomes heated by the warm bodies of those occupying it (and it may be, by lights or a fire) ; and the air thus heated expands, becomes lighter, and passes out of the room through any available opening—usually the chimney. As the result of this, the cooler outside air presses into the room to replace that which has escaped, and so a regular current is set up ; the warm light air of the room passing constantly out into the external atmosphere, and the fresh, cool, and heavier outside air is continually forcing its way into the room. The movement of the air here is due to the difference of weight between the air of the room, which is warmed (and therefore lighter) and the outside atmosphere, which is cooler (and so heavier) ; as the lighter inside air escapes from the room, the heavier outside air presses in. It is chiefly by this kind of movement of air that the ventilation of our rooms is carried out, as such movement (unlike the action of winds) is steady, almost unnoticeable, and continual.

Movement of air resulting from these three causes, the mingling of the inside with the outside air, the action of wind, and difference of weight between the warm inside and cooler outside air, is a natural process, and ventilation of rooms and buildings by such means is termed *natural ventilation.* When ventilation is brought about by artificial heating of air by fires, furnaces, hot water and steam pipes, &c., by the use of the steam jet, or by revolving fans, then it is called *artificial ventilation.* The most common example of this is the usual fire in the fireplace of a room and the chimney ; the air heated by the fire expands, becomes lighter, and rises rapidly up the chimney, fresh supplies of air being drawn from the windows, doors, or other openings towards the fireplace.

It is plain that in whatever manner ventilation is carried out, there are certain openings, such as the chimney, or it may be the window, through which the air of the room passes out, and which are therefore *outlets.* Other openings, such as an open door or window, which serve to admit fresh air into the room, are *inlets.* Speaking generally, the size of the *inlets* should equal twenty-four square inches for each occupant of the room, and the *outlets* may be of the same measurement. If the inlets are smaller, then the inrush of air must necessarily be more rapid, so as to afford the occupants of the room a sufficient amount of fresh air each hour; and that means the production of a draught. You all know what bitter draughts are often felt from narrow openings, as clefts and crevices in the floor or at the sides of badly fitting windows and doors. Remember also that if your room is small, the air in it becomes rapidly impure from the presence of yourself and the patient, and consequently, in order to keep the room fresh, the air has to be changed so often and rapidly that the passage of the fresh air through the inlets and foul air through the outlets causes violent draughts, which of course are hurtful. On the contrary, if the room is a spacious one, the air, being in much greater quantity, does not need to be changed so quickly, and the ventilation can be managed more gradually and without the production of draught.

And now, practically speaking, *how do you manage the ventilation of a room?* Windows are the best inlets for fresh air, because you want the *pure outside air*. It is a mistake to use the door as an inlet, as thereby impure air is admitted from the lower rooms, from the kitchen, from closets, sinks, it may be drains and middens, perhaps worse. "Windows," wrote Miss Nightingale, "are made to open; doors are made to shut—a truth which seems exceedingly difficult of comprehension. I have seen a careful nurse airing her patient's room through the door, near to which were two gaslights (each of which consumes as much air as eleven men), a kitchen, a corridor the composition of the atmosphere in which consisted of gas, paint, foul air, never changed, full of effluvia, including a current of sewer air from an ill-placed sink, ascending in a continual stream by a well-staircase, and discharging themselves constantly into the patient's room. The window of the said room, if opened, was all that was desirable to air it. Every room must be aired from without—every passage from without."[1] *The window being the proper inlet for fresh air, which is the best part to throw open? And what arrangements are needful to avoid draught?* Now, in this climate, air (unless artificially warmed) entering a room low down, as under a badly fitting door, cannot be borne, as it chills the feet and legs; and similarly, air passing through the bottom of an open window causes a draught which is often unbearable by the healthy and dangerous to the sick—if the bed is placed between the window and the fireplace—that is to say, unless proper precautions are taken, such as the placing of a good screen between the window and the patient. The upper part of the window, then, is the best to open, so that the entering cool air may mingle with the warm air of the room gradually before reaching the occupants. In windy or cold weather, however, a draught may be felt even from this plan—the cool air falling on to the occupants of the room "after the fashion of a waterfall." To remedy this a blind may be drawn in front of the open window, so as to check the draught; or wire or common gauze can be arranged over the opening so as to divide or break up the current of air, but the gauze requires to be often cleaned to prevent clogging. Or the current of air may be turned and directed up towards the ceiling by placing a board in slanting manner from the top window sash; the window itself is sometimes made so as to slant inwards on being opened, as is seen in many churches; in other cases openings are made in the glass panes, these being "louvred," or pierced with holes slanting upwards from the outside, or provided with apertures arranged in a circle, which may be closed more or less as required (Fig. 3). "When there are venetian blinds," says Professor Corfield, "it is only necessary to open the top sash, pull the venetian blind down in front of the opening, and place the louvres so that they give the entering air an upward direction." The simplest plan, however, and one which Professor Corfield strongly recommends, "is by placing a board of wood underneath the lower sash, as suggested by Dr. Hinckes Bird . . . or, instead of being placed under the lower sash, it may be placed across from side to side, in front of the lower part of the lower sash, so that this may be opened to a

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[1] *Notes on Nursing.*

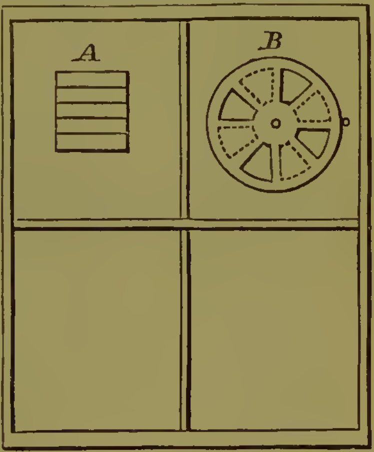

Fig. 3.—Window with (A) "louvred" pane, and (B) Cooper's Ventilator.

The plates of glass in a "louvred" pane are so slanted that the incoming air is directed upwards, and rain is excluded. In Cooper's ventilator, the apertures in the pane can be more or less closed by a circular glass plate, provided with similar apertures, which revolves on a central pivot. In this manner the incoming air is split up into small currents, draughts being thereby lessened.

certain height without any air coming in below it. These boards may be covered with green baize, or some other suitable material, so as more perfectly to prevent the entrance of the air at the lower part of the window. In either case, the bars of the sashes at the middle of the window are no longer in contact, and air comes in at the middle of the window, between the two sashes, taking an upward direction, in the form of a fountain, and producing no draught (Fig. 4). This shows us the direction in which cold air ought to be admitted into a room—after the fashion of a fountain, in which it can be readily obtained owing to its greater pressure, and not after the fashion of a waterfall."[1]

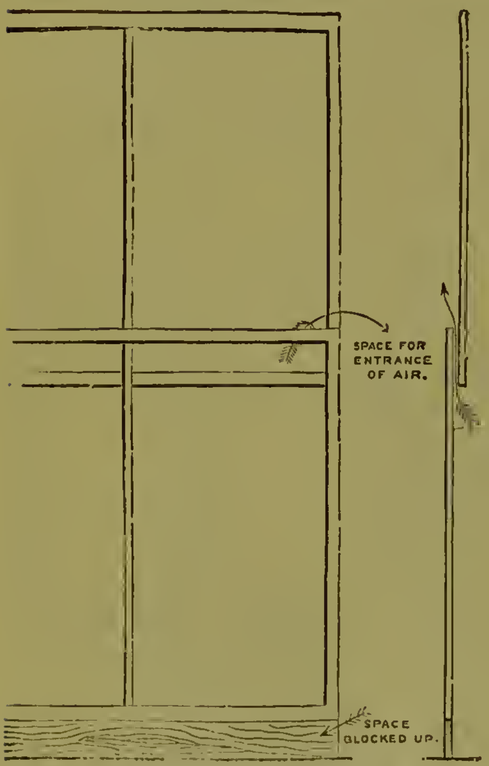

Fig. 4.—Hinckes Bird's plan of window ventilation. Front and side view.

Another plan, recommended by Mr. Tobin, "for bedrooms and other rooms in private houses," is "to cut out slits between the sashes of the windows, so that the air enters vertically, even when the window is shut."[2] This is similar in its action to the plan previously described, but "it is only adapted for comparatively small rooms."

There are other ways of admitting air into rooms by *wall-inlets*, as valved openings in the walls, perforated bricks, and tubes or shafts communicating with the outside air; but these and other methods are more adapted to large public rooms and hospital wards, as are also the plans by which *warmed* fresh air is introduced into rooms. In bedrooms and other rooms in ordinary dwelling-houses, remember a good window—a window that opens both top and bottom—is essential. Even now, one meets with windows made *not to open*, and a hole has to be knocked in the wall high up to let in a little fresh air for the unhappy and half-smothered patient within. As for windows which will not open at the top, these are comparatively common, not only in the homes of the working class, but also in stylish houses, owned and occupied by well-to-do people.

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[1] *Dwelling Houses:* Professor Corfield.—If no board can be obtained to place under the bottom sash, "the lower part of the window can be filled up with carpets, sacks, or anything that is procurable."—*Guide to District Nurses:* Mrs. Dacre Craven.

[2] *Parkes's Practical Hygiene* (7th edit.): de Chaumont.

Of no less importance than a properly-made window is a *good fireplace and chimney.* As the window is the best inlet for fresh air, so the chimney or smoke-flue is the natural and proper *outlet for the foul air of the room;* and "this," says Dr. Louis Parkes, "for an ordinary medium-sized sitting-room, with a fire burning in the grate, is sufficient for three or four people, providing no gas is alight."[1] Even when there is no fire in the grate, there is usually a good up current of air in the chimney, as the warm, lighter air of the room tends to rise up the flue and so into the outside atmosphere. A fire, even a small one, creates a strong and continual current, heating the air in the chimney, which so expands and becomes lighter, rising up the flue; and the impure air of the room rushing to take the place of the air which has escaped up the chimney, a perpetual current is kept up. If the window is tightly closed as well as the door, and no other inlets for fresh air exist, then, in order to replace the air escaping so rapidly up the chimney, fresh air comes also *down* the chimney in gusts, causing the *chimney to smoke.* In such a case, opening of the window sufficiently wide to admit air enough to replace that which escapes up the chimney at once stops the smoking.

You see, then, how important an open chimney is in a room, especially in a sickroom; yet it is by no means uncommon to meet with rooms in which there is no chimney or fireplace at all, and it is very common indeed to find the smoke-flue of a room most carefully blocked up with bags and rubbish. If the chimney is not sufficient for the passage out of the foul air, other means are adopted, such as the construction of foul air shafts opening at the top of the room and running up alongside of the chimney; the warmth from the chimney causes an up current in the shafts, which so form very efficient outlets.

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[1] *Hygiene and Public Health.*

Of such importance to health are proper means of ventilation in dwellings, that it is laid down in the byelaws of the Local Government Board that in every habitable room there must be made at least one window opening directly into the external air, which can be opened one-half at the least, and so that the opening may extend in every case to the top of the window.[1] That is to ensure a sufficient inlet for fresh air. And it is further ruled that for every habitable room not provided with a proper fireplace and smoke-flue, there is to be made an aperture or air-shaft of one hundred square inches sectional area at the least. That is to ensure a sufficient outlet for the foul air.

With proper care and the adoption of measures to keep draughts from your patients, the window may be kept more or less open for the greater part of the year. "The safest atmosphere of all for a patient," wrote Miss Nightingale, "is a good fire and an open window, excepting in extremes of temperature." Again, most people have a great dread of night air, and carefully shut the windows to keep it out. Such alarm is needless, and indeed is difficult to account for. "What air," says Miss Nightingale again, "can we breathe at night but night air? The choice is between pure night air from without and foul air from within. Most people prefer the latter. An unaccountable choice. . . . An open window most nights in the year can never hurt anyone."[2] I can speak feelingly myself on this point, as I have slept with my window open all the year round—winter and summer—and have found the difference between the air of a stuffy confined bedroom and of one the window of which is open to be truly expressed as between "*foul air from within*" and "*pure night air from without.*"

One reason why many people have such mistaken ideas as to the need of fresh air is that they confuse closeness of a room with warmth. They think to admit fresh air is to let in cold and chill. But freshness and cold are two quite separate things; pure air may pass in through an open window all the year round, yet the warmth of the room remain equable; on the other hand, the room may be close and offensive, yet exceedingly cold. *The purity of the air—its freshness—is tested by the sense of smell*, by some one walking straight in from the outside atmosphere; *the degree of warmth—the heat of a room—is tested by the thermometer* (Fig. 5). Never trust in this matter to your own feelings; but find the temperature of the room by means of the thermometer. You should hang this instrument on the wall, about the level of the bed and rather near to it, *not* near the fire or over the fireplace, nor near to (or in the draught from) the window. In this way you will know the warmth of the air which the patient is breathing, unaffected by the heat of the fire or by the cool air passing in at the window. As a general rule, the temperature of the sickroom should be at about 60° F., but there are certain diseases, as lung affections, which may need greater warmth. The newly-born and the old, too, require much warmth—about 65° F. to 70° F. and occasionally even more is necessary for very aged people. So the best rule for you to follow is to ask the medical man at what temperature the room is to be kept; and take the thermometer—not your own sensations—as your guide. If acting as night nurses, remember that the temperature of the outer air is low in the early hours of morning, reaching its lowest point at 3 A.M.; so that it will require all your care to keep your sickroom at its own proper temperature.

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[1] The size of the window, clear of the sash frames, must equal at least *one tenth* of the floor area of the room.

[2] *Notes on Nursing.*

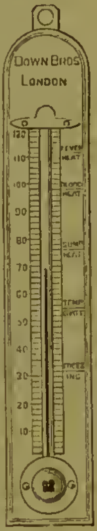

Fig. 5.—Thermometer.

In the summer, your difficulty during the daytime may likely enough be in keeping your room cool enough. You may do much by arranging a green curtain or blind to keep off the strong and painful glare of the sun,[1] by keeping the window opened top and bottom, and seeing that the chimney is quite clear. A good plan is to place a solid block of ice in the middle of the room on a strainer over a basin, so as to prevent a mess and slop as it melts.

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[1] Mrs. Dacre Craven recommends *outside blinds* for this purpose. The blind, with two loops attached to its lower corners, is carried outside the window (which is opened top and bottom), and fastened by means of the loops and some tape to two sticks about three feet long. The sticks are pushed out at the bottom of the window as far as possible, and secured to the window-sill or side of the window.—*Guide to District Nurses.*

Rooms are generally warmed in our country by fires in open grates, and this plan has the advantage that no impurities are added to the air of the room, all the soot and hurtful gases from the fire passing away up the chimney into the outer atmosphere. Further, as I have already explained, the fire and smoke-flue are important for ventilation. Moreover, a fire, besides the warmth it gives, has an agreeable and comforting look in chilly weather. Such are the advantages of a fire in an open fireplace. There are a few disadvantages which it is well for you to know. As a heat-giver the arrangement is wasteful, since by far the greater part of the heat of the fire passes up the chimney ; the rays of heat thrown out from the grate warm the furniture, walls, occupants, and other objects in the room without heating the air, and the walls, furniture, and other articles in the room, in their turn, warm the air; but as the heating effect of the fire lessens very greatly in proportion as an object is further off, the various parts of a room are not warmed equally by this plan.

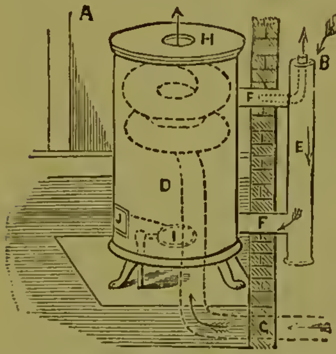

Fig. 6.—George's Calorigen Stove. A, interior of room ; B, exterior of building ; C, wall ; D, the calorigen ; E, a cylinder; FF, pipes communicating with stove and cylinder to supply air for combustion, and to carry off the products of combustion ; G, pipe for passage of fresh cold air to calorigen—can be carried above the floor or between the joists, as may be most convenient ; H, outlet for air into the apartment after being made warm.

Ventilating grates act in a double manner, as they not only warm the room, and aid ventilation as ordinary fireplaces, but cause warmed fresh air to pass into the apartment as well. This is managed by the construction of an air-chamber around the back and sides of the fireplace, into which pure outside air is drawn below, warmed by the fire, and passing up an air-flue by the side of the smoke-flue, enters the room well above the fireplace. *Ventilating stoves* are used for similar purposes, a tube passing from the outside air through the stove into the apartment, so that warmed pure air is thus provided (Fig. 6) ; and the smoke-flue of the stove passing through a portion of the room still further warms the air. In *close stoves* there is no introduction into the room of fresh warmed air, but the air of the room is warmed by the hot stove and smoke-flue passing through the apartment. Stoves have the advantage that they warm the room much more equally than open fireplaces, as the air, being warmed by contact with the stove and its smoke-flue, expands and rises up, the cooler air taking its place, and currents of air being thereby set up throughout the room. *Ventilating* stoves are preferable, on account of the fresh warm air they draw into the room.

There are, however, a few disadvantages connected with stoves which it is well to bear in mind. They are apt to dry the air too much; and if over-heated, they burn the organic matter in the air, causing a close and disagreeable smell. Last, not least, there is risk of a dreadfully poisonous gas (carbonic oxide) being given off into the air, and this is especially the case with stoves constructed of cast iron.

There is a growing tendency nowadays to use stoves unprovided with any kind of chimney or smoke-flue to carry off the products of combustion, for the purpose of warming halls and even rooms and sleeping apartments. This is a most dangerous custom, since the smoke and poisonous gases from the burning fuel, oil, or gas in the stove, mingle with and pollute the atmosphere of the room, to the great risk of the occupants. I am aware that there are stoves of this kind constructed which are advertised as possessing some special arrangement by which the impurities given off by the burning fuel are absorbed, and so rendered harmless; but I must warn you not to rely on the alleged safety of such stoves. Professor Corfield, in reply to my inquiries on this matter, states that "he does not approve of any stoves in which there is no flue provided to ensure the escape of the products of combustion." There are other ways of warming air, as by means of *Hot-water pipes* and *Steam pipes*, but these methods are more applicable to public buildings, mansions, and the larger kind of dwelling houses. In any case, these do not come under a nurse's control.

From what I have said, you see that not only is good ventilation necessary, but also the adoption of such methods of lighting and warming the sickroom that will give off the *least possible* impurity to the air. Of the best means of *warming* rooms, I have already spoken; and the absolute need of *daylight* and *sunlight* has been explained previously. But *artificial lighting* is necessary, to a greater or less extent, when darkness comes on; and here there is a difficulty in that the burning of gas, candles, or lamps, has the effect of fouling the air by destroying its oxygen, producing carbonic acid and other impurities. This is especially the case with *gas*, burnt, as it usually is, in quantity sufficient to give a strong light, and various plans have been devised for carrying off the resulting impurities into the outside atmosphere.[1] Unless rendered harmless by some such methods, gas is certainly not suited for a bedroom, and much less for a sickroom, in which purity of air is so important. Even if the gas is turned down very low, though less oxygen is destroyed, less carbonic acid given off, less heat evolved, yet other hurtful products are formed which foul the air to such a degree as to be noticeable by one entering the room direct from the outside air. *Candles* do not foul the air so much, simply because we burn them in far less number than is sufficient to produce a light equal to gas; but used in quantity enough to light up a room to the same extent as gas, they foul the air more than the gas. *Oil* used in quantity sufficient to produce equivalent lighting power to candles or gas, renders the air less impure than either of them. Considering everything, however, candles are the best for ordinary use in bedrooms; and under the usual conditions of health, no light should be burnt at night, it being quite sufficient to place a candle with safety-matches in a handy position—ready if needed. It is otherwise *in the sickroom*, where a light at night is usually necessary: and here either a good oil lamp, with a suitable shade, or one of the best "night-lights" may be used. Of the latter, Clarke's night-light is a good form: it may be advantageously used with a "food-warmer;" or in a "night-light watch-holder," by which the face of a watch is kept illuminated. The "German Floating Lights" or "Night-candles" are also serviceable.

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[1] Pipes are sometimes used passing into the open air, their inner ends terminating in expanded bells or funnels over the gas burners; the foul products of the burning gas and the warm air of the room are thus carried off by the pipes. The Fulham Union Infirmary is lighted throughout by gas, the burners being placed in brackets at the sides of the wards, over the beds, immediately below the ventilating "outlets," which are simple openings (covered inside with finely perforated zinc) high up in the walls; and here the impurities from the gas, with the foul air of the ward, pass away through the outlets. In the St. Marylebone Infirmary the burners "are placed under inverted enamelled iron basins, from the upper part of which pipes, three inches in diameter," pass into flues, and "thus the whole of the products of combustion are carried into the outer air." An excellent plan is to have the burners completely enclosed in glass globes, into which fresh air is brought from the outside atmosphere, and from which the impurities of the burning gas are carried into a flue, by means of pipes running in the bracket or gaselier. In the Ventilating Globe Light this arrangement is modified, and combined with an "outlet" and "inlet," by which the foul air of the room escapes, and warm fresh air pours into it.

If a patient is "so far recovered that he may *read in bed*," says Dr. Billroth, "the nurse must insist upon his having good and suitable light. The light (daylight, gas, or lamp-light) must fall upon his book from behind, *over his head*."[1]

When available, the *electric light*, in the form of *incandescent or glow lamps*, is infinitely superior to other modes of artificial lighting. It neither robs the air of its oxygen, nor pollutes it with carbonic acid, nor increases its heat to any marked degree.[2] Moreover, it gives a pure white light, closely resembling sunlight, plants thriving under its influence even to the extent of bearing flowers and ripe fruit. The electric *arc light* is objectionable for rooms, because too strong, dazzling, and productive of nitric acid in injurious quantities.

For the purpose of striving still further to extinguish all possible sources of effluvia and polluted air, you should examine the room itself, the floor, walls, and ceiling. If these are made of unsuitable materials, they absorb, catch, and retain all kinds of filth, organic matter and contagion; if, on the contrary, these are impervious and smooth, they

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[1] *The Care of the Sick:* translated by J. Bentall Endean.

[2] Table by Mr. W. H. Preece, F.R.S., showing the products of combustion given off by different illuminants in developing light equal to that produced by 100 candles per hour:

Illuminant.	Quantity consumed.	Carbonic acid produced.	Water vapour.	Heat.
	lbs.	Cubic feet.	lbs.	Units.
Tallow	2·2	51·2	2·3	9·700
Sperm	1·7	41·3	2·0	7·960
Oil*	1·3	33·6	1·8	7·200
Gas	56 cubic feet	40·3	2·5	12·150
Electricity ...	(Coal) 2·2 lbs.	0	0	·257

* The oil referred to is *kerosene;* it may be taken as representing illuminating oil at its best.

neither absorb or harbour dust and impurities, and are easily cleaned. *Floors* are very liable to become fouled by dust, all kinds of dirt, contagion, refuse, and droppings from poultices, discharges from wounds and abscesses, particles of skin, bits of food, and so forth, getting into crevices of the planks and working into the porous wood. The more impervious the flooring, therefore, the safer it is. It should be as perfect, and as free from crevices as possible; the skirting boards should be fitted into grooves in the flooring itself, and the latter ought preferably to be made of beeswaxed oak or varnished deal. Old floors should have their cracks and fissures accurately stopped up with slips of wood, and then stained and varnished. The best flooring for hospitals is good oak, laid very evenly, with no perceptible crevices, on concrete; solid paraffin being then melted and rubbed thoroughly into it with a hot iron.

As to *carpets*, even in ordinary dwelling-rooms, these are simply receptacles for all kinds of dust, dirt from boots, and impurities of every description. If used, it is best to leave a border around the room of polished flooring, and then at least the dust cannot well accumulate in the corners; and the carpet can be removed, beaten and shaken more readily. I shall have more to say of carpeting for the sickroom in the next lecture.

As to *walls*, plaster absorbs organic matters readily. Almost half the plaster of the wall of a certain Parisian Hospital ward was found to consist of foul organic matter. Plaster walls should therefore be painted, or distemper-coloured; or else scraped and limewashed at regular intervals. If painted, care must be taken that neither the paints, nor the "dryers" with which they are mixed contain lead, otherwise the occupants of the room may be injuriously affected. Wall-papers, unless varnished, especially the thick, porous, and flock kinds, readily absorb moisture and organic matter, and hold dirt; the "satin" papers also are highly absorbent of moisture. Many papers too contain arsenic, more especially the green varieties, but those of other tints, even some white papers, are not unfrequently charged with the same poison. Such papers are highly dangerous, as arsenic is given off into the air of the room either as a fine dust or as an extremely poisonous gas (arseniuretted hydrogen). Sir Douglas Galton insists that "in purchasing wall papers a guarantee should be required from the seller; but it is also desirable to have the specimen analysed." One rule should be never forgotten: when walls are re-papered, the old paper must be completely removed, and the plaster underneath thoroughly cleaned. The most suitable walls are those which are quite impervious from being coated with some kind of cement, or large glazed tiles,[1] or which are "enamelled" or oil-painted. These do not catch dust or contagion readily, nor absorb moisture; and any impurities that do adhere can be easily washed off.

Have a care, too, that the walls of the room are *dry;* if there are any signs of damp it is not suitable for a sick person. As to *ceilings*, these ought to be often lime-washed. A better plan still is to render them impervious by cement or paint.

Of course it is impossible to obtain all this perfection in the room of a private dwelling, but I want you to have an idea of what you should try for, and strive as near as you can to reach. Much care is needed in the choice of the furniture of the room—the bedding, and other articles; but I shall deal with these in the following lecture.

[1] Small glazed tiles or bricks are less suitable, as the numerous joints afford lodgment for dirt and insects.

LECTURE III

THE SICKROOM (*continued*): CHOICE AND ARRANGEMENT OF ITS CONTENTS—CERTAIN IMPORTANT DETAILS OF NURSING

Bed and bedding: bedstead, mattress, sheets, blankets, coverlets, pillows and bolsters—Position, height, and breadth of bed—Bed-curtains and valances—Bed-making—Changing sheets—Bed-rests—Bed-pulleys—Draw-sheets or underlays—Mackintosh or waterproof sheeting—Roller-pillows—Bed-cradles—Bed-tables—Bed-pans—Chamber utensils and urinals—Slop pails—Furniture: washstand, tables, chairs, screen, &c.—Coal-box—Curtains—Carpet—Window-curtains—Clock—Washing the sick—Dressing the sick and changing under-linen—Carrying and moving the sick—Bed-lifts, carrying-chairs, and other appliances—Admission of visitors—Preparation and cleaning of sickroom.

In the last lecture I explained to you the principles which should guide your selection of a sickroom, the need of a continual supply of fresh air by well-arranged ventilation, the degree of warmth necessary, and the steps requisite to ensure cleanliness of the room and purity of the air.

I have now to direct your attention to the *contents* of the room, the bed and bedding, and the choice and arrangement of the furniture, as well as to *certain details of nursing,* such as bed-making, changing the sheets, washing patient, and similar matters.

It is by no means rare, even in these days, to meet with the old-fashioned four-poster bedstead, with valance hanging down all around (causing the air to stagnate under the bed, and probably concealing an offensive chamber utensil), and curtains above encircling (and often roofing in) the invalid so closely that he lies in a still atmosphere rendered offensive by his own breath and the steaming from his own body. It is difficult for old-fashioned people who have been accustomed to use this funereal arrangement all their lives to think anything of it but good; yet in reality it is the worst—the *very* worst—form of bed that can be designed. *Under* the bed is stagnant air fouled by the effluvia from the chamber utensil; and *over* the bed is likewise stagnant air fouled by the breath of the patient and offensive perspiration from his body,—this poisoned atmosphere he breathes as he lies amid bedclothes and on mattresses damp with the polluted steaming from his body and reeking with effluvia of the hidden chamber utensil beneath. Besides all this, the wooden framework is cumbersome, unwieldy, takes up far too much space, is difficult to keep clean, and its crevices and joints are harbours of dust, infection, and vermin. An *iron bedstead* with chain springs, or a woven wire spring mattress (Figs. 7 and 8) is by far the most suitable, being comparatively light and very easily cleaned; it should be from 3 to 3½ feet wide, *not more,* so that the nurse can assist the patient readily without straining herself unduly or kneeling on the bed. For a grown-up person its length should be 6½ feet. Such a bedstead, supplied with rollers or castors on the legs, as shown in the diagrams (Figs. 7 and 8), is easily moved, in fact so easily as to be at

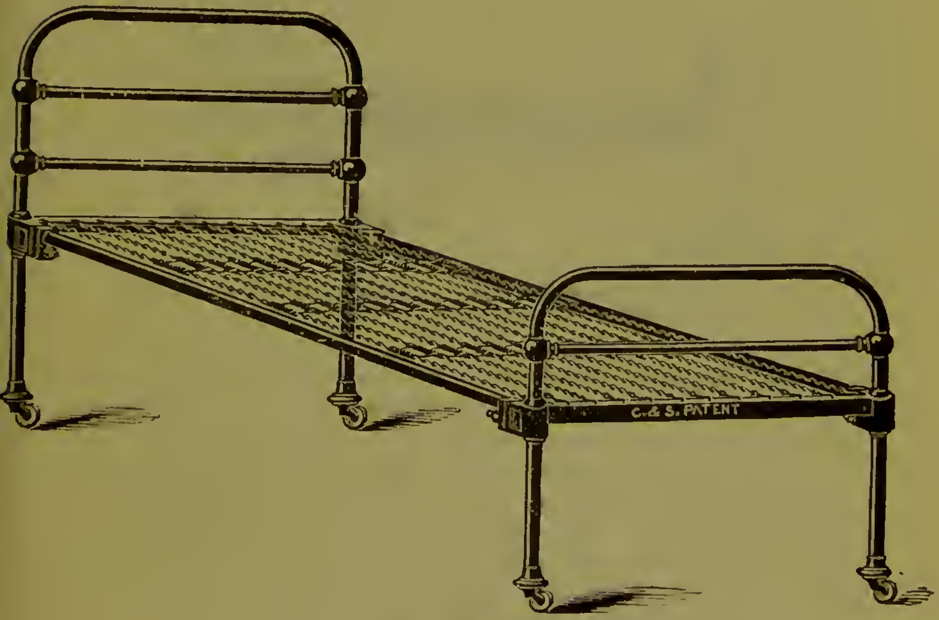

Fig. 7.—Plain Iron Bedstead with spring mattress.

times very inconvenient, the bedstead slipping away from its position at the slightest pressure. Hence it is recommended that the two legs at the head of the bed *only* should be fitted with castors; for by such an arrangement, the bedstead is more steady, and yet, when necessary, may be readily moved by the nurse lifting the foot of the bed a little and guiding it in the required direction. As it is very essential that there should be free circulation of air both above and below the bed, it is best to have neither valance nor curtains; these, besides causing stagnation of the air around the patient, tend to retain dirt, dust, contagion, and vermin. Then again, the old-fashioned favourite—the feather bed—though still clung to by those long accustomed to its use, must be put aside; as though soft and yielding at first, it soon becomes lumpy and hard in parts, the patient sinks into a hole and gets uncomfortable, the nurse cannot easily get at him to dress any wound or to move him, the bed itself becomes dirty, clammy, and damp from absorption of perspiration, the retention of effluvia, dirt, and contagion.

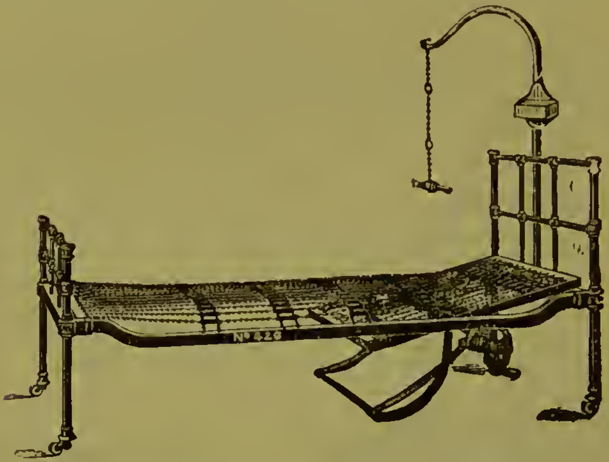

Fig. 8.—Invalid Iron Bedstead, with back-rest to raise or lower the patient, spring mattress, and self-elevator.

A *thin mattress of horse-hair or of coir fibre* is the right thing to use; such material being clean, cool, yielding, and not so liable to absorb or retain impurities. Straw or chaff mattresses are sometimes useful, and these do not absorb impurities to any extent, but have the disadvantage of being cold, bulky, and hard. "One great advantage of a chaff bed," says Dr. Cosgrave, "is, that if it is spoiled, it can be emptied and the cover washed and refilled,"[1] all being done easily, rapidly, and cheaply. Flock or woollen mattresses should be rigidly avoided.

The *sheets* may be either of cotton or linen, but preferably of cotton on account of its greater warmth. The usual custom of putting a blanket between the mattress and under-sheet is not advisable. "No blanket," says Miss Nightingale, "*under* the patient, which acts like a poultice and promotes bed-sores."[2] "The *sheet*," writes Dr. Billroth, of Vienna, "is spread over the mattress; it must be white, and of sufficient size to tuck under the edges. To keep the mattress from being soiled, insert a waterproof sheet between mattress and sheet."[3] The *blankets* should be of the best make, light, and of white or light yellow hue, so that the least speck of dirt can be at once seen: those known as "light Witney blankets" are especially recommended.

The *outer covering* or *coverlet* should be light, and yet contribute sufficiently to warmth. The usual weighty cotton counterpane or quilt must be laid aside as being heavy and cumbersome, and tending to keep in the perspiration and impurities arising from the patient. "It is generally considered," says Miss Lückes, "that scarlet blankets form the best sort of coverlets for the use of the sick. It is popularly supposed that they help to keep away fleas, but I will not vouch for the truth of this supposition. Scarlet coverlets look bright in a ward, but the glare of the colour may prove a little trying to some sick people."[4] A better outer covering, in the summer months at all events, is simply a clean sheet or a linen check; if more warmth is needed, an Austrian blanket may be adopted, or a perforated chintz-covered down, which is light, easily moved, and yet warm.

The *pillows* ought not to be too yielding nor soft, on the contrary they are more comfortable when moderately firm; horse-hair is the best stuffing for these, provided it is not packed too tightly; and both pillows and bolsters should be enclosed in their proper coverings. Dr. Billroth, of Vienna, recommends "two pillows as wide as the bed, about fifteen inches deep, and nearly eight inches thick in the middle. They may be placed together by the patient or the nurse, as is most comfortable to him."[1]

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[1] *Hints and Helps for Home Nursing and Hygiene.*

[2] "Nursing the Sick," in Dr. Quain's *Dictionary of Medicine.*

[3] *The Care of the Sick:* translated by J. Bentall Endean.

[4] *Lectures on Nursing.*

The *position of the bed* is important. It should not be thrust into a recess of the room, nor placed with one side against a wall; for the air should freely circulate around the bed, and it is necessary for the nurse to have easy access to the patient from both sides. In some cases (especially of contagious disease) it is found better to have the head of the bed, for similar reasons, away from the wall. You should avoid placing the bed so as to face the window, or the light will fall directly on to the patient's eyes; but if you cannot arrange the bed in any other way, much can be done to ward off the strong glare by the judicious use of screens or a dark green blind. You must always remember that light is very necessary for the sick, and it is preferable to arrange the position of the bed so that the light falls crossways on it. Miss Nightingale insists very strongly on this. "The sick," she says, "should be able, without raising themselves or turning in bed, to see out of window from their beds; to see sky and sunlight at least if you can show them nothing else, I assert to be, if not of the very first importance for recovery, at least something very near it. And you should, therefore, look to the position of the beds of your sick one of the very first things. If they can see out of two windows instead of one, so much the better."[2]

As a general rule, the best situation for the bed is between the door and the fireplace, so that the effluvia and impurities arising from the patient may pass away by ventilation up the smoke-flue; but if this arrangement cannot well be carried out, the bed can be put between the window and the chimney, care being taken that draughts are warded off by careful adjustment of a screen or curtain.

The *height of the bed*, if possible, should be such that the head of the patient is not at a higher level than the throat of the chimney, so that he may lie in the freshest current of air. You will be fortunate too if the bed can be arranged at the height most suitable for your own nursing work—that is to say, at the height at which you can lift the patient and

[1] *The Care of the Sick:* translated by J. Bentall Endean.

[2] *Notes on Nursing.*

attend to his wants with the least strain or effort on your own part. There must be free circulation of air both below the bed and above it. Therefore you must not allow any valance, as it causes the air to stagnate under the bed, frequently serves to conceal an offensive chamber utensil, and, likely enough, dust and dirt, and itself contains contagion, dirt, vermin, and other impurities. For similar reasons bed-curtains are best abolished, as a general rule; but occasionally light, washable curtains managed with judgment (and changed often) are of use for warding off draughts or a too strong light. Under no circumstances whatever should thick, heavy, or dark curtains be adopted.

There are a few precautions needed in *bed-making*. It is very important to draw the under-sheet (and the under-blanket if one is used) quite tightly over the mattress, securing them by tucking both well in at top, bottom, and sides of the bed, or by fastening them to the mattress with safety-pins. You must be careful about this so as to prevent any ridges, creases, or rucks in the under bedclothes; such little troubles are quite enough to make a patient miserable, and also tend to the formation of bedsores by pressing unequally on the sufferer's back. The bolster should be in a case of its own; but, if not, it must be rolled in the upper end of the under sheet, the difficulty then being to keep the bolster well up in its proper position and at the same time the under sheet tight and free from creases.

The pillow also should have its own case; and it is always better to have one or two additional pillows at hand, for it is by no means an easy matter to arrange that the head and shoulders of the patient are properly and comfortably supported. A thoughtless nurse is very apt to place the pillow in such a fashion that the head of the patient is supported, and the neck and shoulders are *not* supported, and this is, I need scarcely remind you, most distressing to a weak person. A good plan is to place the pillow lengthwise between the bed-head and the mattress, so that there shall be no hollow or drop between the pillow and bolster on the one hand and the mattress on the other. In arranging the upper bed-clothes, it is of importance *not* to fold back the *upper* end of the blanket and coverlet (if these are too long), but *only the sheet*, so as to avoid heaping a weight of folded clothes on to the patient's chest. Should the blanket and coverlet be rather too long, the lower end should be folded over, and this has the additional advantage of affording greater warmth (often much needed) to the feet. The upper sheet and blanket should be carefully tucked in at the sides, and especially at the bottom of the bed. It looks extremely unbusiness-like and dirty for portions of the blanket or sheet to hang down at the side of the bed. As regards the coverlet, Miss Lückes says that "in places where linen checks are used . . . they should be tidily pinned round the foot of the bed to keep them straight and smooth. At hospitals where thicker counterpanes are used, they are folded in such a manner as to produce the same result, but the lighter material is altogether preferable."[1] I have already alluded to the necessity for *light* coverlets of sufficient warmth.

As to the *re-making of the bed*, the way in which it is best to go to work varies with the condition of the patient and, to some extent, with the circumstances in which you are placed. If the patient is well enough to be moved, he may be carried, or wheeled in an invalid chair or on a couch into an adjoining room; while the window of the sickroom is thrown widely open, the sheets and blankets shaken separately and placed for a time on chairs or tables to be thoroughly exposed to the fresh air, the mattress taken off the bedstead and similarly freshened—for a little time at all events before the bed is re-made.

If the patient can only be got out of bed for a few minutes while it is re-made, mind that he is carefully lifted on to a couch or into an armchair, wrapped up in a blanket or "down," with his feet covered with flannel and, if necessary, placed against a hot-water tin. Having placed him comfortably, set to work at once, with some one to help you, to re-make the bed. And always remember, when either making or re-making a bed, to place the bed-clothes on a chair, table, or something else convenient; and not be so slovenly or dirty as to throw them on the floor, from which they may retain dust, dirt, or contagion.

If the patient is quite confined to his bed, it is far better (if it can be managed) to have two beds in the room, each complete in itself with mattress, blankets, sheets, pillows, bolster, and coverlet. The invalid can then pass twelve hours in each bed, that is, the night in one bed, the day in the other. The mattress, sheets, blankets, &c., of the unoccupied bed should be carried out of the room to air; so that each bed is thoroughly aired, freshened, and re-made every alternate twelve hours.

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[1] *Lectures on Nursing.*

It is only seldom, however, that this plan can be carried out; two complete beds are not always available, and even if they can be got, there are often difficulties as to the size and arrangements of the sickroom. It thus happens that you frequently have to change the sheets with the patient lying in the bed.

The *upper sheet may be changed* in either of the following methods: (*a*) The bed-clothes being loosened all around, the clean sheet, with perhaps a clean blanket over it, is laid on the bed—which may, or may not, according to your judgment, have the coverlet and one blanket first removed; then, while one person on one side of the bed holds on to the clean sheet and blanket, another person on the opposite side carefully removes the soiled sheet and blanket. Any remaining bed-clothes are then replaced. (*b*) Or you may, after loosening the bed-clothes all around, place the clean sheet rolled up at the foot of the bed beneath the soiled sheet, and then, assisted by another person on the opposite side, unroll and carry up to the top of the bed the clean sheet, which of course in this way is placed in its proper position next the patient; the bed-clothes, including the soiled sheet, are then removed, the latter put aside, and the blankets, &c., replaced. (*c*) Another plan is, after freeing the bed-clothes all around, to place the clean sheet—loosely gathered together—near the top of the bed, and then assisted by another person on the opposite side, to draw the clean sheet downwards over the patient at the same time that you carry with you the soiled sheet, which is brought out at the foot of the bed. The *under sheet may be changed* in the following ways: (*a*) Loosen the bed-clothes all around, and remove the pillow and bolster; roll or turn the patient over very gently to one side, then roll the soiled sheet lengthwise against the patient's back; next place the clean sheet (rolled lengthwise also to half its width) with the roll touching (and alongside) the roll of the soiled sheet; then gently roll or turn the patient back again to the side opposite to that on which he was lying; lastly, unroll the clean sheet as you remove the soiled one. (*b*) Or instead of rolling the sheet lengthwise, and changing them, so to speak, from side to side of the bed, you may advantageously roll the sheets crosswise and change them downwards from head to foot of the bed. Thus, having loosened the bed-clothes, roll the sheet crosswise at the top of the bed, and raising the patient's head and shoulders carefully, at the same time removing the pillow and bolster out of your way, continue rolling the soiled sheet down the bed till the roll is against the patient's back; then place at the head of the bed the clean sheet rolled up crosswise, and quickly unroll it down the bed until *its* roll touches the soiled roll. The shoulders and head of the patient are then laid down, the pillow and bolster being replaced, the hips are gently raised, and the rolling downwards of the soiled sheet and the unrolling of the clean sheet are continued until in turn the feet are reached, raised, and the soiled sheet is altogether replaced by the clean one.

In changing sheets, either upper or under, it is always best for two persons to work together; and remember to see that the clean sheets have been previously well aired and warmed in another room. Another little matter you should bear in mind is that, whether you are re-making the bed or making the patient comfortable by rearranging his pillows, never shake the pillow upon the bed. This is of importance, since it is refreshing to many invalids to have their pillows shaken up and rearranged frequently during the day. A good plan is to change the pillows pretty often, by gently passing a cool pillow under the sufferer's head when you withdraw the warm one. It requires considerable tact to make a patient comfortable as regards his pillows; the back often needs support, so a good way is to press a pillow well down under the back, and then to add pillow after pillow successively (one behind the other) until back, shoulders, neck, and head, all feel easy and comfortably rested. If more propping up is needed, a properly made *bed-rest* (Fig. 9) may be procured with the greatest advantage. These are made now in great variety, some being completely of wood or metal, others consisting

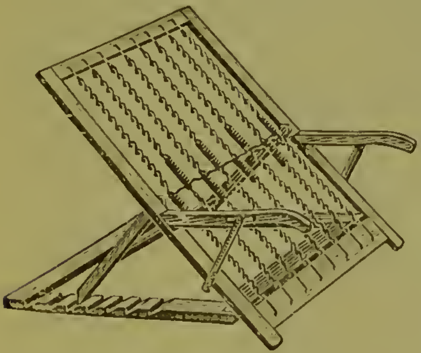
Fig. 9.—Bed-Rest, with spring back.

of a wooden or metallic frame to which canvas, webbing, or spring backs are fastened. These all possess the advantage of being firm and steady on the bed, and can be fixed at any angle so as to support the patient in the half-sitting-up position or at any other slope; but whatever kind is selected, it should possess "arms," as shown in the diagram (Fig. 9), otherwise a feeble patient may slip down side-ways. *Netted* or *canvas bed-rests* can also be got, which are passed around the back of the patient, the ends being tied to the feet of the bed—the patient being thus *slung up*, so to speak, and the canvas or webbing adapting itself well to the back and lapping around the sick person so as to support him comfortably and steadily in the desired position. An *improvised bed-rest* can easily be made by putting a chair upside down on the bed behind the patient's back, with a judicious arrangement of pillows. The chair rests on the edge of the seat and the top of the back; and the patient's back is supported by the back of the chair.

An *Invalid Iron Bedstead provided with a back-rest* to raise or lower the patient, as shown in the diagram (Fig. 8) is useful in some instances; and it is usually a great advantage to have a *self-elevator* or *bed-crane* fixed at the head of the bed, as in the illustration (Fig. 8), by which a patient can raise himself to a greater or less extent according to his strength. It is far better to have this appliance fitted to the bed-head instead of to the ceiling, as should it be desirable to move the bed, then the patient has still the benefit of his self-elevator. In some instances, however, a rope with a handle suspended from the ceiling proves a great boon. Another useful appliance is the *bed-pulley* or *bed-trace*, which is simply a loop of cord, strap, or towelling fastened to the foot of the bed, by which the patient can pull himself up. A roller-towel, slung around the rail at the foot of the bed, makes a good bed-pulley.

In certain instances, as in very helpless, paralysed, bedridden, and many accident and operation cases, other measures for the protection of the bedding are needed in order to keep the patient dry and clean, and the mattress and under bedclothes especially free from pollution. For this purpose *draw-sheets* or *underlays* are used, which consist either of spare sheets, sheets specially made for the purpose, or sheets folded two or three times, with *mackintosh* or *waterproof sheeting* inserted in the folds of the draw-sheet or placed underneath it.[1] The draw-sheet should reach from the waist or middle of the back to the knees; and when soiled may be readily changed in the same way as an under sheet. If it consists of a folded sheet of any length, one end should be used first, the unused portion being rolled up at one side of the bed; as it gets dirty, the soiled portion can then be drawn and rolled up on the opposite side, the clean roll being undone as required. Miss Lückes says, "In some German hospitals tapes are sewn on to the mackintoshes and draw-sheets, and they are tied to the sides of the bed. It is a good plan, as it keeps them in place and free from wrinkles, but it involves a great deal of trouble. . . . Every accident bed should be made up with a mackintosh and draw-sheet. Do not wait for the mattress to be saturated before discovering that one is necessary."[2] Dr. Billroth, of Vienna, says, "Smooth tension of the underlay is best secured when the linen sheet is so doubled that strong wooden rods can be slipped through the two ends of the draw-sheet, between the folds (the two ends of the underlay must be joined together like a round roller-towel). The rods then lie along the sides of the bed with their ends projecting beyond the underlay at the top and bottom. Now, if a strong girth or strap be passed around the upper ends of both staves, and another around the lower ends of both, and, running across and under the bed, are drawn tight (by means of buckles) the formation of creases will be impossible."[3] I need scarcely add that draw-sheets when soiled should be speedily replaced by clean ones, and that the waterproof sheeting should be often changed, cleaned, and properly dried in the open air.

Patients who are very weak and feeble, or who are helpless or paralysed, are apt to slip down in the bed time after time, to their great discomfort and annoyance. It is no use putting a hassock or stool to their feet as a support, as their knees give way, and they slip down as much as before. The only good plan is to use a *round* or *roller pillow*, about five inches round, fastening it by means of tapes or webbing from its ends in such a manner to the bedstead that the patient in reality sits on the pillow as he lies in bed.

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[1] Fairly good temporary substitutes for waterproof or mackintosh draw-sheets "can be made out of two folds of brown paper, or of closely-printed newspaper."—*Guide to District Nurses:* Mrs. Dacre Craven.

[2] *Lectures on Nursing.*

[3] *The Care of the Sick:* translated by J. Bentall Endean.

To keep the weight of the bedclothes off injured or diseased parts of the body, *bed-cradles* or *bed-frames* (Fig. 10) are used. These may be readily improvised from old boxes, by removing the lid, knocking out the two ends and inverting them over the affected part. Small three or four-legged stools may be used for the same purpose; or a band-box, with the lid removed, and holes of sufficient size cut in the sides, placed upside down, will do. The most simple plan, however, and one which may prove useful in home and district nursing, is, as described by Dr. Cosgrave, "to pass a corkscrew through all the bedclothes, guarding its point, which is to be inside, with a cork. A string tied to the handle of the corkscrew, and passed over the top of the bed or over a nail in the wall, will enable the bedclothes to be fastened at a convenient height. By using two or more corkscrews, a regular 'tent' can be made, removing the pressure of the clothes entirely from the patient."[1]

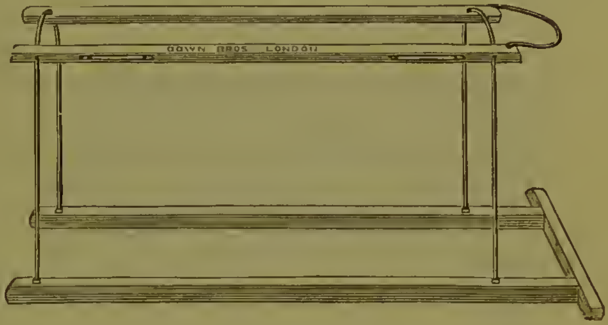

Fig. 10.—Bed-Cradle.

Water-beds and *water* and *air-cushions* of different shapes and sizes are necessary for the proper management of certain cases; but I shall have occasion to speak of these in connection with bed-sores (Figs. 15, 31, 32, 33).

Bed-tables are a great pleasure to those who are well enough to use them. Some are "portable," and made to stand on the bed, being hollowed out at the side nearest the patient's chest, and having very short legs (Fig. 11). The meals may be served on such tables, and some are provided with a flap that can be raised up at a slope for the purpose of reading or writing. Then there are "stand" or "adjustable" bed-tables (Fig. 12), which consists of a stand placed by the bedside, and a table—arranged for reading, writing, or for holding meals—which can be moved across the bed when required in a suitable position. Some of these are made very handy and complete, and are provided with lamps.

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[1] *Hints and Helps on Home Nursing and Hygiene.*

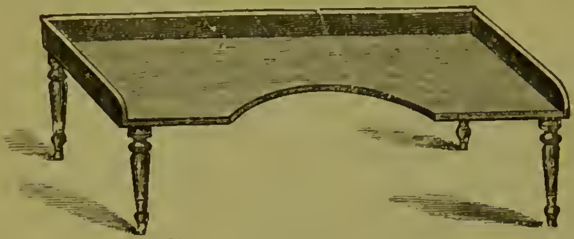
Fig. 11.—Portable Bed-Table.

I next come to speak of the vessels used for receiving the excreta—the *bed-pans* (Fig. 13), *chamber utensils*, and *urinals*. And before going further, I must remind you that the excreta, both urine and discharges from the bowels, constantly give off effluvia and offensive vapour—so that, if allowed to remain in the sickroom, they pollute the air to such an extent as to render ventilation useless. It is a usual and *dirty* practice to leave chamber utensils and bed-pans, no matter how full, uncovered, beneath the bed—so that the mattress and bedding become moist and polluted from the offensive vapours rising from the excretions; and the air of the room,

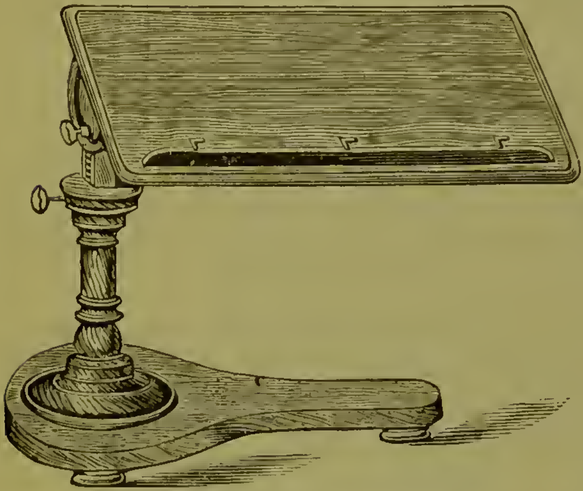
Fig. 12.—Stand or Adjustable Bed-Table.

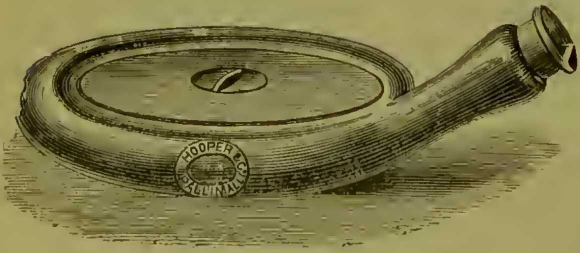

Fig. 13.—Circular Bed-Pan, with Lid.

as I have said, reeks with poisonous effluvia. This process is fitly completed once in the twenty-four hours, usually in the morning, by the carrying of a slop-pail into the room, into which the excreta are emptied, so as to give off a final offensive gust in the apartment before being conveyed—distributing effluvia on the way—through perhaps the greater part of the house to an outside privy.

Now, to avoid all this mischief, certain simple precautions are necessary. No slop-pails, under any pretence whatever, are to be brought into the sickroom, and if, from unavoidable circumstances, this rule cannot be enforced, as may happen in district nursing amongst the poor, the pails should always be covered, if without lids, by folds of paper or a damp cloth or towel. The *chamber utensils* and *bed-pans* (which are best of glazed white earthenware, with properly-fitting lids) should not be placed under the bed; but, immediately after use, should be carried straight to the closet, emptied, and cleaned —to be brought into the room again only when needed. The same remark applies to *urinals*, of which by far the best are those made of glass with wide necks. As substitutes for these, small chamber utensils or old jam-pots are useful, and can be easily kept clean.[1] Should it be more convenient, from the nature of the case, or in district nursing, to keep such articles in constant readiness, they should be placed *clean*, with a little water and disinfectant, near the bed, with a towel over them; and after use removed *immediately*, as I have said. Usually, these utensils may be conveniently placed ready in an adjoining room or closet.

Great care must be taken in keeping these articles clean by rinsing and washing them with warm water and soda, and certain towels must be set aside for the *sole* purpose of wiping them. It is also a good plan to place a little disinfectant in the bed-pans before and after use; but I shall have to allude to this in connection with contagious disorders.

Lastly, never forget to warm a bed-pan before use (you can do this by pouring warm water into it); and be very careful and gentle (getting another to help you if needful) in assisting feeble patients to the use of these articles.

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[1] "An ordinary dust-pan with flannel on its edge makes a good slipper bed-pan. The handle must be held well down. Extemporary bed-pans can also be made out of a soup-plate."—*Guide to District Nurses:* Mrs. Dacre Craven.

Speaking of the *furniture* generally of the sickroom, it is better to do with as little as possible; and all of it should be constructed of such material as metal, well polished wood, or marble, which can be easily cleaned, and are the least likely to catch and hold dust, dirt, and contagion. A *small* and light *bedside table* is often a great convenience, on which to place medicine bottles, a vessel containing ice (if needed for sucking), a few flowers perhaps, and other things as required. An ordinary *table* of fair size is always useful. A *wash-stand*, with a *moveable* basin is a great convenience, particularly if on wheels, as then it can be easily run alongside the patient. But there is a great objection to fixed or stationary basins, as the outlet pipe is apt to become foul from the dirty water thrown down (and therefore apt to give off pollutions to the air of the room), and besides there is the risk of foul gas from sewers or drains passing up the pipe or through the overflow holes into the room (from bad sanitary arrangements). If you have to use such a basin, be careful to thoroughly rinse it out after each time of use, put in the plug, and fill up with clean water. When required again, run out the water, and fill fresh again before using.

Dressing-trays often prove useful, either for the dressing of wounds, or for sponging and washing purposes. These can be procured in various sizes, of different shapes—square, triangular, kidney-shaped (Fig. 14), and of varied materials — papier-maché, metal, earthenware, or vulcanite. Of whatever kind, they should be kept scrupulously clean.

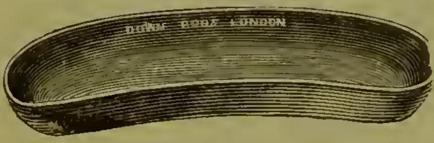

Fig. 14.—Kidney-shaped Dressing Tray.

Chairs should be (in preference) of wood with cane backs and seats. An easy chair of the same materials, or one consisting of a light wooden or metallic framework with horse-hair padding, is under some certain circumstances desirable. *Drawers* and *cupboards* are to be *avoided;* they harbour dust and contagion, and thoughtless people are apt to push soiled garments and fouled vessels of different kinds into them by way of making the room look tidy. A *screen* is often of the greatest service for warding off draughts or excessive glare of the sun. One can be easily improvised by arranging a shawl, blanket, counterpane, or similar article over a clothes-horse.

A *coal-box* will of course be needed for the supply of the fire; the difficulty is to feed the fire without making a noise. One plan is to send up the coal-box with each lump of coal wrapped in a piece of paper ready to be lifted on to the fire; but you can generally place coal on the fire less noisily by putting on soft gloves and lifting gently each lump separately into the grate. "Turf" is spoken of by Dr. Cosgrave as being "useful in the sickroom; it is noiseless and not liable to go out; it also has a pleasant and antiseptic smell." With a view of avoiding noise, a wooden shovel is advised for taking away ashes, and the use of a piece of wood for a poker.

As a general rule, the *less carpet in the sickroom the better*, especially when the case is a surgical or an infectious one, as the carpeting is certain to take up and retain dirt, contagion, and all kinds of impurities. A strip of carpet by the bedside, and perhaps by the wash-stand, will usually prove sufficient; but still better are strips of Chinese, Indian, or Manilla matting, as such material does not take up dirt readily, and can be easily removed, shaken, and cleaned. Then as regards *window-curtains*, nothing of a heavy, dark, or woollen nature is allowable. A dark green blind is usually quite sufficient to use as a shade if the sunlight gets too powerful; if curtains are used at all, they should be of light material, as lace, chintz, white muslin, or dimity.

One or two pictures (hung straight on the wall) illustrative of cheering subjects serve to enliven the room, as also do a *few* flowers tastefully arranged on the table. A *clock*, providing it is a *silent* one and placed in easy view of the patient, is often much appreciated; it moreover enables the nurse to carry out her duties with punctuality.

You doubtless perceive that the selection and arrangement of the bedding and furniture of the sickroom rests on the need for extreme cleanliness, the different articles being recommended which are least likely to catch up dust and contagion, and which are also the most readily cleaned and purified. It is quite as urgently necessary that the *patient* should be kept clean. You know that the skin throws off a large amount of moisture—partly in the form of invisible vapour, partly as beads of sweat—together with refuse organic matter from the body. In many extremely serious disorders the skin acts very freely indeed, giving off large quantities of perspiration which contains much offensive waste material from the body. In this way poisonous and refuse matter is got rid of by the patient to his great relief; but the clothes of the patient, the bedclothes, and the air of the room receive the moisture and offensive matter thus thrown off—hence the need of good ventilation for the purification of the air, and of regularly changing the clothes and bedclothes of the patient for dry and clean nightdress and bedding. Hence too the *necessity for keeping the bodies of the sick scrupulously clean,* and the pores of the skin open and free to act, so that Nature may have a chance of throwing off in copious evaporation of moisture and perspiration the poisonous and waste matters which accumulate in the body as the result of disease.

As a rule, you should wash the face, neck, arms, and hands of a patient every day, at least once; the feet and legs about every other day, or, at the very least, once a week; and a warm general bath once a week, or, if this cannot be managed, the whole body should be washed in the manner I shall presently describe. If any part of the patient becomes unexpectedly dirty it should be at once bathed and cleaned; and in prolonged cases the back should be carefully bathed *daily,* thoroughly dried, and dusted with violet powder, in order to ward off bed-sores.

Before commencing to wash a sick person everything should be got ready for use by the bedside—warm water and soap, piece of soft flannel, towel, and basin; and a piece of waterproof sheeting or thick towel should be arranged to protect the bedding. A good time to begin operations is after breakfast, when the patient is, comparatively speaking, refreshed by a night's rest and the morning supply of food. Of course all draughts must be carefully warded off, and the patient should be on no account needlessly exposed by rash stripping off of the clothes. With judgment and tact a good deal of washing can be easily managed, and safely done *bit by bit,* washing the face first, drying it, then taking one arm, washing, drying, and re-covering it before going on to the other arm, and so on. This process can often be extended safely to the greater part of the body, but there must be no hurry or excitement about it.[1] Like other details of nursing, it should be carried out quietly though quickly. If the skin anywhere is very tender and painful, bathe it gently with a soft sponge, smoothing the part, as it were, in one direction only, and then mop it dry with a nice soft towel. Frequent sponging of the hands and face is often very grateful to the patient, especially in cases of fever, and a little toilet vinegar or eau-de-cologne may be added to the water with advantage. The hair of the sufferer at the same time may be gently combed out, and brushed with a brush sprinkled either with toilet vinegar or eau-de-cologne, care being taken to protect the pillow by speading a towel over it. The hair of women, being long and often luxuriant, should be arranged in loose plaits tied at the ends, and laid upon the pillow. The mouth should be rinsed out with tepid water, to which a little Condy's Fluid is added—about a teaspoonful to half a pint—and the teeth and gums cleaned with the same liquid by means of a very soft tooth-brush, or a piece of lint or bit of clean soft sponge tied at the end of a piece of wood.

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[1] Mrs. Dacre Craven, in her *Guide to District Nurses,* insists that "no patient should ever be washed on or between soiled *sheets,* as it gives a

The *dressing of a patient* or the *changing of his under-linen* or *nightclothes* is a most important matter, since these become damp from the moisture and sweat, and foul from the offensive organic matter thrown off by the bodies of the sick. It can be conveniently managed in connection with the morning wash. Some consider it "a good plan to keep two sets of under-linen going, so that the same may not be worn day and night." Many persons are terribly afraid of putting clean things on any one who is ill. They say it will "give him cold." Never was there a greater mistake if the business is managed with due precautions, that is to say, if the patient is not allowed to excite or over-exert himself with the idea of helping, if as little of his body is exposed during the process as possible, if draughts are carefully excluded while the change is made, and lastly, if the clean clothes are *thoroughly aired*, *dried*, and *warmed*. Always remember, too, to see that all bedgowns and under-linen are *thoroughly* dried, aired, and warmed (*out* of the sickroom) when taken off a patient,

peculiar chilly sensation." The sheets should, therefore, be first removed, and replaced by two blankets (kept for the purpose) in the usual way. The nightdress is then, with due precautions, drawn over the head, and the patient washed bit by bit as described, but the body not being uncovered, the nurse "holding the bedclothes *down*, not away from the body." In this manner the entire body can be washed and dried without exposure; warm, aired, clean linen replaced and the bed re-made.

even though they are only taken off briefly for the business of washing the sick, so that they may not be replaced damp and foul as on removal.

When undressing a patient, the usual method is to draw the nightgown, after unfastening it at the neck and wrists, gently up the back, and remove it over the head, taking care, in the case of a maimed or painful limb, to remove the bedgown first from the sound side: thus, if the left arm is injured or painful and tender from disease the clothing must be taken off the right arm first. In dressing a patient under like circumstances the nightgown should be carefully drawn on the diseased or injured limb first.

It is a good plan, however, under ordinary circumstances, when changing the underclothes, to gently slip out the arms of the patient from the bedgown he has on, then pass the fresh gown over his head, and pull it down over him as your assistant brings the soiled garment off over the feet. In this way needless exposure of the body is avoided. Very frequently, however, it happens that the sufferer is far too ill for this method to be adopted, so it is best then to rip the nightgown up the middle in front, having previously cut up the fresh gown in a like manner and stitched tape to it for the purpose of fastening it when on. Then gently take one arm out of the soiled gown, and at once slip on the sleeve of the fresh gown; after which, with great care and gentleness, push the soiled gown off under the shoulders as you carry the fresh gown in the same direction, and finish by pushing the other sleeve of the whole gown off and putting on the sleeve of the fresh gown. Lastly, you tie the tapes of the fresh gown in front. If a flannel shirt or vest is worn underneath the bedgown, you go to work in the same way, but be careful, before beginning to make the change, to slit up the clean vest or shirt in front (as well as the bedgown) and thrust the sleeves of the vest or shirt all ready into the sleeves of the fresh gown.

If a patient is strong enough to sit up for his meals, it is convenient to have a dressing-gown or a flannel jacket to wear, as the arms as well as the chest are thereby kept warm, and a garment of such a kind is altogether more comfortable and tidy than a blanket or shawl thrown over the shoulders.

The *carrying or moving of helpless patients* is a business which demands usually much strength, but you may have to assist in carrying out this duty, or, what is almost more important, to direct others how to accomplish it.

I have described fully elsewhere[1] the different methods of lifting and carrying sick and injured patients, so here I can only allude to those plans which prove most serviceable in the sickroom. To *lift a patient* properly, *two* helpers *at least* are needed, and it is very desirable that there should be a third to give assistance. The two helpers should stand facing each other on opposite sides of the patient, and passing their arms underneath him, grasp each other's hands under the shoulders and upper part of the thighs, while the third helper attends to the injured or diseased limb, or to the patient's head. The helpers should work well together, and at a given signal lift the patient slowly and carefully as much as is needed. In lifting or moving a broken limb, remember to place one hand *above*—the other *below*—the fracture, *underneath the limb*, grasping the latter with firmness sufficient to prevent it slipping or rolling.

If the bed, as may often be the case, is too broad to allow of the patient being lifted by a bearer standing on each side of him, then the helpers must both take position on the same side, *one* passing an arm beneath the patient's neck and the other arm under his shoulder-blades, the *other* bearer passing both arms round the middle of the body—one above, the other below the buttocks, and the *third* bearer (if there is one) passing both arms under the lower limbs, excepting in case of fracture, when he must must place one hand (as I have explained) on each side of the broken bone so as to steady it. In some cases the patient may be carried by *one* strong bearer, the latter putting one arm well under the thighs and the other round the back, the patient placing his arms around the bearer's neck. The weight of the patient must be borne on the chest of the bearer; and Dr. Billroth, of Vienna, insists that this method is the best and safest for *removing a patient from one bed into another*, care being always taken that the bearer moves to "the same side of the new bed as that from whence he bore the patient," or much confusion will ensue. Should this plan appear undesirable, the patient may be readily lifted and moved by two, or *preferably three* bearers as above described, the bearers moving by small quiet side steps as they convey their charge from the one bed to the other. If the beds are of equal height they may be brought close together, when the under bedclothes, with the patient on them, can be gently dragged on to the fresh bed. This plan is rendered more easy by passing first of all some india-rubber sheeting beneath the under sheet and securing it to the bed with safety-pins, taking care that the india-rubber cloth reaches over to the fresh bed, the advantage being that the under sheet, with the patient on it, is readily pulled over the glossy smooth surface of the india-rubber cloth.

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[1] *Illustrated Lectures on Ambulance Work.*

In some instances an *improvised hammock* proves of great service; four persons, for example, seizing fast hold of the corners of the under sheet may lift the patient from one bed to the other. This plan is, however, rather trying to the bearers, who also may knock the sick person with their knees while moving him, and, moreover, the patient is apt to sink into a comfortless doubled-up position as he is carried. A better plan is to roll up tightly together the sides of the under sheet and blanket *over* the patient so as to envelop him, and then to lift him (with the aid of others) by the roll thus formed. To manage this a blanket (if one is not used before) should be passed beneath the under sheet some time previously in readiness.

If it is required to carry the patient in a perfectly horizontal position, an *improvised stretcher* may be used by fastening each side of the under-clothes to a pole or broom handle. A ready way of doing this is to roll the sides of the clothes around the poles, and then each one, of *four* bearers, to clasp with one hand the end—with the other hand the middle—of of a pole with the clothes around it. Working well together, the bearers should rise quietly like one man, and moving by short side steps, easily carry the patient in a perfectly flat posture.

The usual plan of *lifting a patient upwards in bed* is to stoop a little so as to allow the sick person to put his arms around your neck, while you pass your hands under his arms and clasp them beneath his shoulders. If the sufferer cannot use his arms, and so help by clinging around your neck, it is better perhaps to move him up by pulling the under-clothes upwards on the mattress with the patient on them. The method recommended by Dr. Billroth is to slip the arms under the hips, and so lift the patient, who can himself assist by "pressing with his hands and heels against the bed."[1] There are various appliances constructed now for moving weakly or helpless patients, which are often of great service,

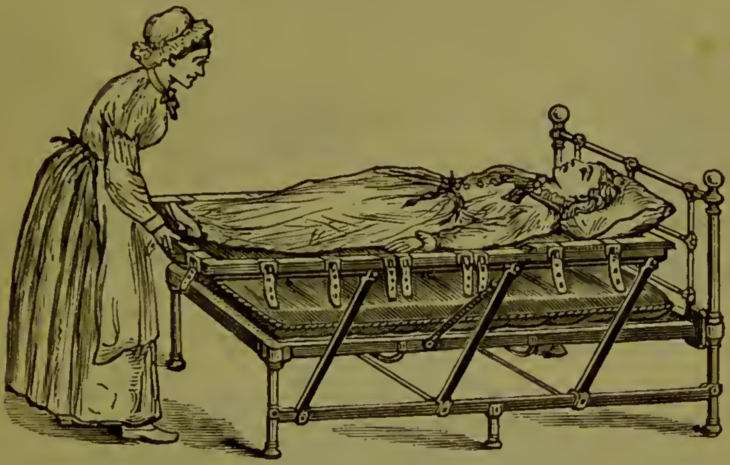

Fig. 15.—Hooper's Invalid Bed-Lift and Elastic Water Mattress; affording a ready means of raising an invalid for the use of the bed-pan (the lift on which the patient rests having a suitable opening for the purpose), ablutions, elevating the back and head, ventilation and adjustment of the bedding, &c.

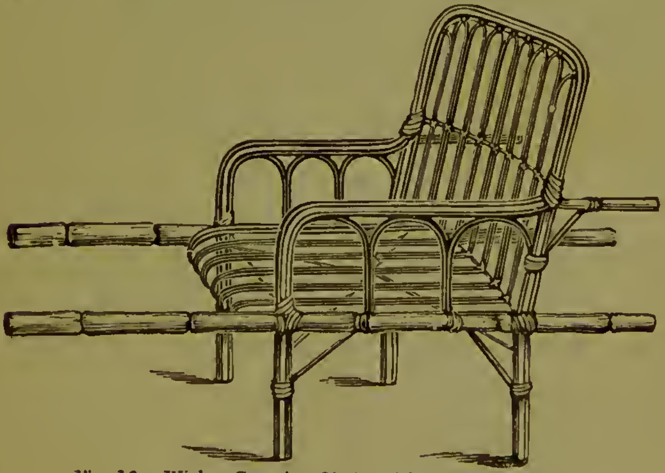

Fig. 16.—Wicker Carrying Chair, with Bamboo Handles.

if people are in a position to procure them, as *bed-lifts* (Fig. 15),[2] *canvas litters, carrying chairs* (Fig. 16), and similar articles.

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[1] *The Care of the Sick:* translated by J. Bentall Endean.

[2] Hooper's bed-lift (7, Pall Mall East, S.W.) and Heighton's bed-lift

For the purpose of supporting comfortably the lower limbs—often a most essential matter—*leg-rests*, as shown in the diagrams (Figs. 17 and 18), are exceedingly useful.

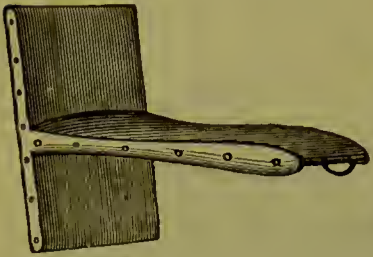

Fig. 17.—A Plain T Leg-Rest.

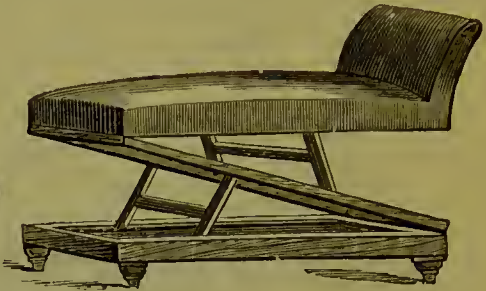

Fig. 18.—A Double Rising Leg-Rest, which can be used with any chair, and at any angle required.

In all serious cases the nurse should act according to the instructions of the medical man *as to the admission of visitors* to the sickroom. Special precautions are needed in the case of the contagious Fevers, so that the visitors may neither be attacked themselves nor carry the infection about them amongst others likely to catch such Fevers; but I shall have to speak of this matter later in the course. There are certain general rules to guide you, however, in *all* cases of serious illness. Visits should be so arranged that neither the meals of the patient nor his periods of rest and sleep are interfered with; neither should bad news or intelligence of a startling or exciting kind be told him. A sick person needs rest of both mind and body, and the greatest harm is often unthinkingly caused by the constant intrusion of well-meaning but gossiping and noisy friends. There are two very troublesome kinds of visitors. There are some who enter the room in a boisterous manner, wring the sick person's hand roughly, talk loudly, say he "looks much better than he expected," and that "he'll soon be all right," and, generally speaking, play the part of a "jolly good fellow," in order, as they say, to "cheer him (the patient) up." There are others, again, who represent the opposite extreme; these steal into the room on tiptoe, with woeful expression of face, hold whispered conversations, say "he looks dreadfully ill," sug-

(Gresham Road, Brixton, S.W.) are different types of this appliance, and both would well repay an inspection.

gest that he is not being properly treated, advise a change of doctors, urge the giving of this or that article of food (usually the *most* indigestible) and the trial of this or that remedy (generally the *most* unsuitable). The effect on the patient of such visitors is simply *appalling.* I can use no other word.

As a general rule, the fewer visitors admitted the better, and these should lay aside their hats or bonnets, overcoats or cloaks, before entering the sickroom, which they should enter promptly and quietly, without any haggling or talking in the doorway. They should sit down while conversing, and sit down too in full view of the patient, and sufficiently near to him so that he may both hear and see his visitor without twisting his head or over-straining his attention. As regards conversation, the rules I gave you for nurses in the first lecture apply with equal force to visitors.

The effect of visits on patients should be carefully observed, but the effect is not seen so much during the visit as *afterwards.* Buoyed up with pleasurable excitement or disturbed by less agreeable feelings during the presence of the visitor, a sick person may appear for the time stronger, more spirited, and better altogether. This appearance is too often delusive, the temporary excitement being followed by corresponding depression and lowering of the vital powers, so be careful to observe how a patient is *after* a visit, and also *what kind of night he passes after it*—good or bad, restful with natural sleep, or disturbed and wakeful.

The close of this lecture may fitly consist of a few remarks as to the *preparation of the sickroom* for the reception of a patient, and the manner of *cleaning* the room during the time your care of the sick person lasts.

Having chosen the room which is most suitable, of those available, for the care of an invalid, you should at once see that the chimney is clear, light a fire, and throw open the window. If you have ample time to spare you may advantageously wash the floor thoroughly, seeing of course that it is properly dried before the patient arrives.

Frequently, however, you will not have time for this; but in any case you should rub the floor thoroughly over with a damp cloth (wrung out of water with, if possible, a little Condy's fluid or other disinfectant), washing the cloth and wringing it out again for continued rubbing of the floor until all dust and dirt have been removed; and then you should dry the floor with a dry cloth. In the same manner you must cleanse the furniture and walls.

You see now the advantage of the floor, walls, furniture, and other articles being as impervious as possible, as you can clean them easily and quickly in the manner described; they are not injured by the process of cleaning, they are not penetrated by dirt or dust, contagion, nor foul gases or vapours, and so, on being damped, do not throw off effluvia or other pollution into the atmosphere of the room.

Having thoroughly cleaned and aired the room, and arranged the bedding and furniture according to the plan which I have explained to you, you must see that the room is warmed up to the proper temperature—about 60° F.

During attendance on any sick person you should clean the rooms in the manner described; if a carpet is down, it should be cleaned by being swept over by a cloth wrung out of hot water, rinsing out the cloth as long as it gets dirty. Never use a dust-brush. If there are strips of carpet only, these can be removed and cleansed in the open air while the floor is being cleaned.

LECTURE IV

FOOD AND DRINK

Food: its nature and composition—The food-principles—Tissue-foods—Fuel-foods—Food necessary for health—Digestion—Digestibility of food—Animal and vegetable products—Cooking—Food for the sick: milk, eggs; meat teas, broths, soups, and jellies; starchy foods, refreshing drinks; concentrated and predigested foods, &c.—Alcoholic beverages—Tea, coffee, and cocoa—Water—Purification by boiling and filtration—Feeding the sick—Lewis's Nursing chart—Feeders.

We cannot live, as you know, without *water*, which we swallow not only *as* water, but also as a part of our usual articles of food. Neither can we do without certain kinds of *mineral matter*, as common salt, iron, lime, and similar substances. These substances also are contained in the food we take, and one at least—common salt—is taken separately; that is, we add it to our eatables at pleasure.

The word "Food," however, is no doubt chiefly connected in your minds with such articles of diet as meat, fish, poultry, game, eggs, milk, and butter, all of which we get from *animal* life; and potatoes, green vegetables, flour, and fruits, which are yielded by the *vegetable* or *plant* world. And you may, not unreasonably, think that the choice of meals suitable for the weakly and the sick is quite a simple matter; yet this is *not* so, as each of our different eatables is not made up of only one substance, but of *several*—several *food-principles* or *food-stuffs*, as they are termed.

I will take *milk* as an illustration of what I mean. You know that from milk you can obtain the *curd*, which is made into cheese, and *fat*, which appears at table as *butter*. There is sugar in milk too, called *milk-sugar*, and lastly, there is a large quantity of *water*, with a little *mineral matter*. *Whey* consists chiefly of the water of milk with the milk-sugar and mineral substances dissolved in it.

Now you know that milk is a natural and perfect food, on which alone the young thrive and grow strong, so that it must of necessity contain all the materials (or *food-principles*) which are needful to maintain life and health. Thus the *curdy* portion of milk goes to form the different tissues and fluids of which the infant's body is composed, and to repair or renew these parts as they waste from the ordinary wear and tear of the human machinery, as well as to make new tissues as the growth of the child proceeds. Hence this *curdy* portion of milk is spoken of as a *tissue-food* or *flesh-former*; of it the framework and machinery of the body is built up in somewhat the same way as a locomotive is constructed of iron and steel.

The *fat* of milk serves to repair and renew the fatty tissues, and the formation of a good layer of fat beneath the skin of the infant not only gives a pleasing roundness to the form, but also helps greatly to preserve the heat of the body. Moreover the bodily heat is itself kept up by the fat which is swallowed, since this when taken into the blood combines with the oxygen which passes into the blood during the process of breathing—heat being the result. In other words, the fat absorbed into the body is burnt (or *oxidised*), and the refuse matters (carbonic acid and water) are mainly got rid of by the breath. Hence *fat* is spoken of as a *fuel-food* or *body-warmer;* it is the fuel of the human machinery, as coal or coke is the fuel of the locomotive; it is burnt or oxidised in the body by the oxygen taken into the blood in breathing as the coal of the engine is burnt or oxidised by the oxygen of the air supplied to the furnace, and in both cases heat and movement result.

The *sugar* of milk, like the fat (and for similar reasons), is a *fuel-food* or *body-warmer*, though far less powerful in this respect than fat, and undergoes certain changes in the body necessary to health.

Then the *mineral matter* of milk is all-important. Lime for the hardening of bone, iron for the red particles of the blood, potash for the solid tissues, and soda for the fluids of the body.

The *water* of the milk is equally essential, since all the structures and fluids of the body contain it, and it is needed, therefore for their repair and renewal. Water, too, is needed as a vehicle or carrier of the tissue-food, fuel-foods, and mineral substances needed for the absorption of these into the blood, and for the conveyance of them to all parts of the body. Water is equally necessary to bear away the waste and refuse matters from the body by the urine, the discharge from the bowels, the sweat, and the vapour thrown off by the lungs.

Other articles of food are not complete and sufficient—each in itself—for the preservation of health, and milk is more especially adapted for the young. Yet our different eatables are each composed of similar *food-principles* as those in milk, though in varying proportions. Thus there is a substance resembling the curd of milk—*tissue-food* or *flesh-former*—in animal flesh (as beef, mutton, pork, &c.), poultry, game, fish, shell-fish, eggs, and also in cereal grains (as wheat, rye, oats, barley, rice, and maize), especially in the pulses (as peas, beans, and lentils), and to a much less degree in potatoes and green vegetables.

Fat, the most powerful *fuel-food* or *body-warmer*, is present, as you know, in the flesh of animals, poultry, game, fish, and in shell-fish; it colours the yolk of egg yellow, gives the richness to cheese, is present in small and variable quantities in the cereal grains and pulses, but exists to a greater extent in certain seeds, as the almond, cocoa-nut, Brazil-nut, and in cocoa. The less powerful *fuel-foods*, *sugar* and *starch* (similar as a food-principle to sugar), are not found in meat, poultry, fish, shell-fish, or eggs, but occur in abundance in the produce of the vegetable kingdom, especially in the cereal grains and pulses (forming almost entirely the *flour* of these), in potatoes, in the pith of some trees (as *sago*), and in the roots of other plants (as *tapioca*, *arrowroot*, and *tous-les-mois*).[1]

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[1] The different *food-principles* are often spoken of under other names, so, simply for the sake of reference, the following table is given:

A. Organic Food-principles (derived from animals and vegetables).	1. *Tissue-foods* or *flesh-forming food-principles*, also called *albuminous* (because of the nature of *albumen*, of which the white of egg is an example), and *nitrogenous* (as they all contain the element *nitrogen* in their composition).	
	2. *Fuel-foods*, called also *non-nitrogenous* (as they do *not* contain *nitrogen*).	(*a*) The *stronger fuel-foods* or *fats*, also called *hydrocarbons* (being made up of hydrogen and carbon, with only a little oxygen).
		(*b*) The *weaker fuel-foods* or *starches* and *sugars*, also called *carbo-hydrates*, (since they are composed of carbon, with hydrogen and oxygen in the proportion to form water).

Continued on p. 74.

Water and *mineral matter* exist in variable amount in all our different eatables.

Now it is found that a man of average size, and doing an average amount of work, needs every day about *four and a half ounces* of *tissue-food, three ounces* of strong *fuel-food, fourteen ounces* of the less powerful *fuel-food, one ounce* of *mineral matter,* and from *seventy to ninety ounces* of *water.*

Knowing this, and knowing also how extremely variable our different eatables are in the proportion of tissue-food, fuel-foods, mineral matter, and water which they severally contain, you can readily understand that the planning of a *fixed* and *regular diet* (as a *prison* dietary, *soldier's* dietary, or *seaman's* dietary) needs very accurate calculation. Any diet, sufficient for health, must of necessity contain, in due proportion, all the four food-principles—tissue-food, strong fuel-food, the weaker fuel-food, and water and mineral matter. Animal food (as meat, poultry, and fish) contains none of the weaker fuel-food (starch and sugar), so we cannot live entirely on flesh. Vegetable food, on the other hand, contains all the four food-principles, and therefore we *can,* and not a few *do,* as *vegetarians,* live solely on the productions of the vegetable world. Further, it is found that whether we subsist wholly on vegetable produce or on a mixture of meat and vegetables, *fresh vegetables are absolutely necessary for health,* on account of certain kinds of mineral matter contained in them. By "fresh vegetables" I mean *potatoes,* "any variety of *green meat,*" as cabbages, lettuce, &c.; and *fruit,* more especially grapes, lemons, limes, and oranges; but *not* the cereal grains nor the pulses.

In the matter of food and diet, as in other things, "circumstances alter cases" to some extent. Thus people who work very hard and undergo great exertion eat more than others, indulging especially in tissue-food and the stronger fuel-food,

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Continuation of note from p. 73.

B. Inorganic Food-principles (mineral products). { 3. *Mineral matter* and *water* and taking more water. Those who dwell in extremely cold climates, as the Esquimaux of the arctic regions, need much of the stronger fuel-food to keep up the bodily heat, so they live chiefly on the flesh of seals, whales, and walrus, which contain large quantities of fat. The very infants, it is recorded, will spit out sugar (the weaker fuel-food), yet grin with ecstasy at the sight of a piece of fat. The populations of the hot Eastern lands, on the contrary, consume the weaker fuel-foods (starch and sugar), which is contained abundantly in the cereals and pulses on which so many subsist. Another curious example of a similar kind is afforded by the Pampas Indians, who live in a climate "burning hot in summer and freezing in winter, . . . who are all horsemen, or rather pass their lives on horseback, . . . are entirely naked; . . . the ground is the bed on which, from their infancy, they have always slept. . . . . They have neither bread, fruit, nor vegetables, but they subsist entirely on the flesh of their mares."[1]

And now a word or two concerning *Digestion.*—Food of any kind is useless unless the digestive organs can make it into a soluble liquid which can pass readily from the stomach and bowels into the blood, and so be carried by the circulation all over the body for its repair and renewal, and for the production of heat. Here is a plan of the organs of digestion (Fig. 19), which may enable you to understand more clearly the processes to which our food is subjected in the body. Food is prepared first by the process of *chewing* or *mastication*, the meat, bread, or other eatables being cut and ground up by the teeth into minute fragments, so that the secretions of the body may get at every particle of food. The food is softened and moistened too by the secretion in the *mouth* poured fourth by the *Parotid* and other *Glands*—the spittle or *saliva*—which has, moreover, a special action on *starchy* food (which is *insoluble*), turning it into *sugar* (which is *soluble*).

The food next passes down the gullet into the *stomach*, in which it is rolled about and churned for a considerable time, soaked and acted upon the while by the acid secretion of the stomach (called the *gastric juice*). Now this gastric juice has a most remarkable effect on the *tissue-food principles* or *flesh-formers* (such as the curd of milk, the white of egg, the solid lean of flesh), all of which are *insoluble*, converting them into a substance known as *peptone*, which is *soluble*. This soluble peptone, with any soluble sugar and any mineral matter

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[1] *A Treatise on Food and Dietetics:* Dr. Pavy.

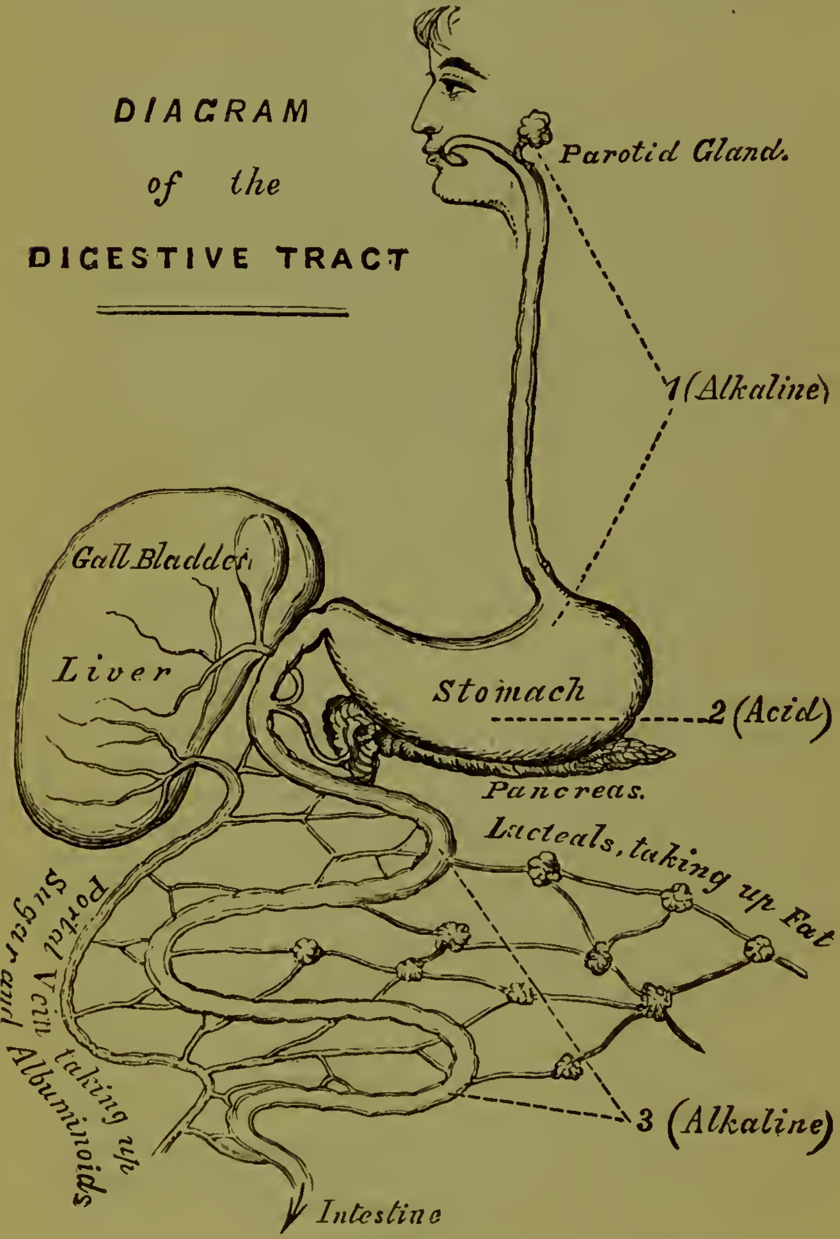

Fig. 19.

in solution, passes easily into the countless tiny blood-vessels of the walls of the stomach.

When the stomach has done its work, the remainder of the food, which by this time is in a pretty evenly fluid condition (and spoken of as *chyme*), passes on into the *bowel* or *intestine.* Here the food becomes mingled with the secretions of two highly important organs—namely, that of the *liver*, which is known as *bile,* and that of the *sweetbread* or *pancreas,* which is called *pancreatic juice.* Any *tissue-food* which has escaped the action of the stomach and its secretion is now changed into *soluble peptone*—*starch* is turned into *soluble sugar*—and the *fat* is broken up and divided into such extremely minute particles as to give the contents of the bowel the appearance of milk—the liquid is called *chyle.* The digestion of the food, or the conversion of it into a soluble form, is further continued by the secretion poured out by numberless tiny glands in the bowel—this secretion being spoken of as the *intestinal juice.* And so the soluble peptone, and sugar (which escaped the stomach), and the fat (divided into extremely small particles) pass into the tiny blood-vessels of the bowel, but chiefly into a network of delicate vessels (called *lymphatics* or *lacteals*) which carry the liquid nutriment into the veins.

Lastly, the undigested and unabsorbed residue of the food passes away by the bowels.

The *digestibility of food* depends on several circumstances—the nature and composition of the food, its hardness, toughness, and the way in which it is prepared or cooked.

Animal food, speaking generally, is rather more easy of digestion than that of vegetable origin.

Animal Food.—*Mutton* is rather more digestible than *beef;* and *pork* is much more difficult to digest than either, on account of its richness. Indeed, many persons are always made ill by pork. The extremes of age, too, affect the flesh of animals as regards digestibility; the *old* are extremely tough and stringy, and the *young* (as *veal* and *lamb*), though tasty and tender, are less nourishing, and more difficult of digestion. The objection of many to *venison,* which is readily digestible, lies in its richness. *Tripe* and *sweetbread* are both easy of digestion, though the former is a little rich from the amount of fat it contains. *Liver* and *kidney* are objected to by many, the former because of its richness, the latter on account of the closeness of its texture or hardness. Meat is rendered, as a rule, less digestible by the process known as *curing*. It is pointed out, however, that *bacon* is the exception, being a highly useful and fairly digestible food, containing much fat, some tissue-food principles, with a small amount of water, and is largely (and advantageously) partaken of by the working classes.

The flesh of *fowls*, *turkeys*, and *guinea-fowls* is easily digested, but that of *geese* and *ducks* is rather too firm, rich, and highly flavoured for delicate people. The flesh of *game* (as *pheasants*, *partridges*, *grouse*, *quail*, *snipe*, and *woodcock*) is easily digested and pleasantly flavoured. *Wild fowl* (as *wild ducks*, &c.), though highly relished by some, are not fitted for the weakly, on account of the firm, strong-tasted character of the flesh. The flesh of *hares* and *rabbits* is deficient in fat: the former has a rich and tasty flavour, which is too much for many stomachs; and the flesh of the latter, though tender, is peculiarly close in texture.

Fish do not afford such nutritive and stimulating food as the flesh of animals and birds, yet some kinds are particularly useful for dieting invalids or persons with feeble digestive powers. For such a purpose the *whiting* is very suitable, being so delicate and easily digestible as to have earned the title of "the chicken of the fish tribe." Other digestible and tender fish, suitable for invalids, are the *sole*, *flounder*, *plaice*, and *dab*. Many of the choice fish served at table, and enjoyed by people blessed with good digestions, are quite unsuitable for the dyspeptic. *Mackerel*, *salmon*, *sprats*, *herrings*, *pilchards*, and especially *eels*, are rich and fat. *Cod-fish* is firm, frequently indeed hard—too much so for an invalid; and *turbot*, though of excellent flavour, is somewhat rich for a weak stomach. The skin of both *turbot* and *brill* swells up, on boiling, into a kind of gelatinous substance, which, though considered a choice morsel, is somewhat indigestible.

Many *shell-fish* are used as food, as *lobsters*, *crabs*, *craw-fish*, *shrimps*, *prawns*, and *oysters*. Of these *oysters* alone are suitable for invalids—that is, when *raw*, and as a matter of fact are often taken by delicate patients with good results.

Eggs are nutritious, since they contain a considerable quantity of tissue-food, and also fat (which gives the colour to the yolk), and taken in the *raw* state, or *lightly* boiled or poached, are readily digested.

Milk, being a complete food in itself, containing all the food-principles necessary for life, is very valuable. Specially adapted for the sustenance of the young, it is also of great value for aged persons in feeble health. Speaking generally, it is of priceless value in the sickroom, as the majority of patients can readily digest it, and from its perfect character as a food it will sustain life, and also, from the large amount of water it contains, relieve thirst.

You must bear in mind that human milk and the milk of the lower animals which suckle their young differs somewhat —the milk of each being adapted to its kind. Thus cow's milk is richer in tissue-food (or *curd*) than human milk, but contains less sugar; so that if an infant is to be fed on cow's milk, the latter should be sweetened as well as weakened by the addition of water. Dr. Pavy advises for this purpose a solution of sugar (*milk*-sugar in preference)—an ounce of sugar to three quarters of a pint of water; about one third of this to be mixed with two thirds of milk. Goat's milk is richer in tissue-food and fat than cow's milk, and so is more nutritious, but it is less digestible, and, moreover, has a somewhat peculiar odour and flavour. Ass's milk contains more sugar and less tissue-food and fat, so that it is easily digested, light, and sweet. Mare's milk is remarkably deficient in tissue-food and fat, but contains a large quantity of sugar, so much so that an alcoholic drink is prepared from it—*koumiss*.

Butter is an important part of the diet of the well-to-do, from the large quantity of easily digestible fat which it contains. The poorer classes usually take fat bacon or dripping instead.

Toffee was highly spoken of by the late Dr. Milner Fothergill. "What heaven-born instinct guided old-fashioned people to make toffee in cold weather is beyond our ken. . . . A quantity of toffee, consisting of butter and sugar, and often a proportion of treacle, two or three times a day in cold weather, *plus* the ordinary meals, enabled a child to keep up the body heat. . . . . Many a dainty, delicate child have I saved from becoming tubercular by advising its mother to let it have ample quantities of toffee. Without it, one good-looking wife and mother would have gone into her grave years ago. . . . The way in which butter goes down into the stomach as the toffee melts in the mouth is possibly the explanation why it agrees with very delicate children so well as it does."[1]

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[1] *The Town Dweller:* Dr. Milner Fothergill.

Buttermilk is milk from which the greater part of the fat has been removed—otherwise it has all the nutritious properties of milk. *Whey* is much inferior, being deficient in both curd (tissue-food) and fat, yet it forms an agreeable drink for the sick in feverish disorders. *Cheese* is an important article of diet, since about half a pound contains as much tissue-food and even more fat than a pound of meat. Some kinds—the "poor and closer" sorts—are, however, difficult of digestion; and "toasted cheese, no matter of what kind—for in all the consistence becomes close by toasting—is one of the most indigestible articles that can be eaten."[1]

Of *vegetable* food products *wheaten flour* is the most important, as by "baking" it is made into *bread.* Bread, if properly baked, is readily digested. If the whole grain is used for the flour, the bread is "brown," and more nutritious than when only the central starchy white portion of the wheat is used; for it is in the coats (or *bran*) of the grain that the greater part of the tissue-food, fatty, and mineral constituents exist. Yet, though more nutritious, brown bread has an irritating effect on the bowels from indigestible particles of the bran, so that it is often taken in preference by people troubled with constipation; but, for the same reason, it must be strictly avoided where there is a tendency to *Diarrhœa* or *Dysentery*—under such circumstances white bread, containing for the most part only starchy matter, being the most suitable. *Oatmeal* is a very nutritious food, containing starch with good proportions of tissue-food, fat, and mineral matter; it can be cooked easily, though not made into bread, and people can take it and flourish on it for long periods without tiring of its flavour. *Rice* consists mainly of easily digestible starch. *Peas*, *beans*, and *lentils* contain a large amount of tissue-food as compared with other vegetable products, and are therefore very nutritious, though rather indigestible and productive of flatulence. The *starchy* products of vegetable life, as *arrowroot, sago, tapioca,* and *tous-les-mois,* are, when properly cooked, easily digestible, and often prove of much service in the sickroom. *Potatoes* are rich in starch, and, like many green vegetables and fruits, contain mineral matter of a kind necessary for the preservation of health. Potatoes, when young, are indigestible; otherwise, *when properly cooked,* they are easy of digestion.

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[1] *A Treatise on Food and Dietetics:* Dr. Pavy.

Lettuce, asparagus, seakale, and *vegetable marrow* are readily digestible; as is also *celery* when cooked. *Cabbage* is less delicate, and rather less digestible; of vegetables of this class, *cauliflower* and *broccoli* are the most tender and easy of digestion. *Spinach*, if well cooked, is agreeable and wholesome; but is indigestible and has slight aperient properties.

The different succulent *fruits*, as oranges, lemons, grapes, melons, &c., are refreshing, and often of much service on account of the mineral matter and sugar which they contain.

The digestibility of food is greatly influenced by *cooking*. It removes the toughness of MEAT, loosening the fibres, rendering them firmer and more brittle, so that the flesh may be readily broken down into tiny fragments by chewing, and easily penetrated by the secretions of the digestive organs. To prevent the escape of the nutritious juices or the "goodness" of the meat, a good-sized piece should be chosen, and exposed to a very strong heat for about five minutes, so that the outer layer of the meat may be hardened sufficiently to prevent the loss of the meat juices. Thus, in *boiling*, the meat should be first immersed in boiling water for five minutes; and in *roasting*, exposed to intense heat for a similar period; but afterwards, the cooking should be continued at a moderate heat, otherwise the flesh will become hard and shrunken. Meat loses about a quarter of its weight during the process of cooking, sometimes more, from the evaporation of water, the loss of juices and of melting fat.

Boiling renders food exceedingly tender and digestible, but somewhat robs it of flavour. *Roasting*, on the other hand, makes meat more tasty, but scarcely so digestible, and the surface is in some degree scorched. Boiling is therefore usually found to suit a delicate stomach the best. *Broiling* or *grilling* is the same kind of process as roasting, but the pieces cooked being smaller and thinner, a greater surface is scorched; yet this method is a quick one, and meat thus cooked is usually well-flavoured. *Baking* and *frying* are both processes unsuited for weak stomachs; baked meat usually being rich, greasy and of strong flavour; and frying being objectionable from the use of boiling fat or oil, which penetrates the meat to a greater or less degree. *Stewing*, if managed properly, and carried out at a low heat (*not* boiling) renders meat very digestible and tender, but care must be taken not to spoil it by the addition of rich sauces and greasy matters. If boiling is allowed, the meat becomes hard; and the same result often follows *Hashing*, which is the stewing of previously cooked meat. "Meat may be stewed," says Dr. Pavy, "in its own vapour. For example, a chop or other piece of meat taken upon a small scale may be placed in an ordinary preserve jar, and this tied over at the top, and partially immersed in water contained in a saucepan. The water in the saucepan is made to simmer or gently boil, and when the proper time has elapsed, the meat is found perfectly soft and tender, and surrounded by a liquor derived from the juice which has escaped during the process. Meat thus prepared is in an exceedingly suitable state for the convalescent and invalid."[1]

The best way of cooking Fish for invalids is by *boiling;* but this should be done thoroughly, so that the flesh can be easily separated from the bones. The harder the water used, the firmer and higher flavoured is the fish. Next to boiling, *broiling* is the most suitable method; but *frying* is very objectionable for weakly people.

Oysters are most easily digested when taken *raw*. Any kind of cooking only serves to harden them.

Eggs, too, are best taken either raw or *lightly* boiled or poached.

Cooking is equally needful for the preparation of vegetable food products, since it softens them, loosens the little cells of which they are composed, and causes the grains of starch to swell up and burst. In this way cooking makes vegetable food easier of mastication, and more readily penetrable by the juices or secretions of the digestive organs.

Potatoes, which are rich in starch and contain important mineral matters, should be cooked with great care. To avoid loss of the mineral matters, *steaming* is the best process; otherwise these vegetables should be *boiled in their skins.* The cooking, too, must be *thorough*, or the starch grains will be unacted upon; and *slow*, or the tissue of the potato will be hard. Potatoes properly cooked are quite "floury" or "mealy," and in this condition—*and in this only*—are easily digestible. *Mashing* potatoes is a useful practice, as it serves to get rid of any hard masses of indigestible lumps.

Rice "is best cooked by thoroughly steaming." Dr. Milner Fothergill recommended the baking of *starchy foods* previous to their preparation into milk puddings; and he instructed his cook to put the sago, rice, tapioca, &c., "in a little pie-dish in the oven, dry, and bake it for an hour or two, taking care not to scorch it by having the oven too hot . . . . The most perfectly digestible milk pudding is made by adding some ground malt to the baked starch, when the warm milk is poured on, and stirring the whole together, after that setting it in a warm place for ten minutes before putting in the oven. . . . The malt acts upon the cracked and changed starch granules, and the resultant product is fit for the weakest baby, invalid, or dyspeptic. (There is, however, one point on which the cook must be put upon her guard, *i. e.* not to add any ordinary sugar to a pudding containing malt.)"[1]

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[1] *A Treatise on Food and Dietetics.*

Speaking generally, the digestibility of *peas*, *beans*, and *green vegetables* depends on their being young and thoroughly cooked.

Cooking has a beneficial effect in other ways. The *warmth* of cooked food is comforting, restorative, as well as a help to digestion, especially after fatigue, exhaustion, or exposure to cold. Further, good cooking gives *variety to the diet*—and variety helps digestion. It is not enough that the food-principles (tissue-food, fuel-foods, &c.) should be consumed in sufficient proportion: those of each class need to be taken in varied forms as represented by different eatables (as "sameness cloys"), and if this is difficult always to arrange, a skilful cook can serve up the same foods in different forms and guises, which has an almost equally good effect.

Our choice of *food for the sick* is of necessity limited, since the sustenance must be given in such form as the patient can most easily swallow, and it must be of such a nature as can be readily digested and absorbed. You will doubtless be called upon to nurse many acute cases of disease, such as Fevers, various inflammatory disorders, besides other illnesses in which the powers of digestion are greatly enfeebled or well-nigh lost. Here, therefore, nourishment should be in the *liquid* or *slop* form, and of such a nature that it can be absorbed readily and without taxing the digestive organs. *Milk* is a liquid food, complete in itself, since it has all the food-principles essential to life; and, from the quantity of water it contains, tends to relieve the thirst of feverish patients. Yet milk is apt to disagree with many, if due precautions are not taken in the giving of it, hard curds being formed in the stomach and vomited in cheesy-looking masses, or passed undigested through the bowels. This is a very serious matter in cases of inflammation or ulceration of the bowels—for instance, in *Typhoid fever*. It is better, therefore, to give milk diluted with an equal part of soda-water, seltzer water, Vichy water, Vals water, or lime-water. Frothed up with one of the effervescing waters, it is greatly relished and easily digested by many patients; while in other cases lime-water has the preference. Or "ten grains of bicarbonate of soda and the same amount of common salt may be added to every pint of milk and water (equal parts)": or light carbonate of magnesia or prepared chalk "must be used. Usually as much as will lie on a sixpence to a half-pint of milk is enough." The mixing of milk with a little biscuit powder, oatmeal, ground rice, isinglass, or arrowroot is an excellent plan, since it increases the nutritious value of the food and also prevents mechanically the formation of hard curd in the stomach.

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[1] *A Manual of Dietetics.*

Milk that is boiled before use[1] often sits more easily on a delicate stomach. It is very suitable in cases of *Diarrhœa*, especially when prepared with the starchy foods (to which I shall presently allude), or with isinglass,[2] or cinnamon.[3]

If milk cannot be taken in any form, then you can fall back on *whey*, which consists of the watery portion of milk with its mineral matter and milk-sugar—the curd and most of the fat being got rid of.[4] To make this more nutritious, if necessary, Dr. Burney Yeo recommends the addition of "strong beef tea or meat juice to it," or the "yolk of an egg previously whipped up with a little hot water." The same author recommends *eggs*—not cooked—"but beaten up with *hot* (boiling) water, strained, and added to a little light broth or clear soup. . . . Or the yolk of an egg may be beaten up with a little hot milk and water; or with a little hot, weak tea, sweetened with grape-sugar."

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[1] This should always be done if the milk is not fresh.

[2] Dissolve a little isinglass in water, mix it well with half a pint of milk, then boil the milk, and serve with or without sugar as preferred.—*Ringer.*

[3] Boil in one pint of new milk sufficient cinnamon to flavour it pleasantly, and sweeten with white sugar. This may be taken cold with a teaspoonful of brandy, and is very good in cases of diarrhœa. Children may take it milk-warm without the brandy.—*Ringer.*

[4] Whey is called by different names according to the mode of its preparation. Ordinary "Whey" is made by the addition of *rennet* to warm milk and straining; but *Treacle Whey*, *White wine Whey*, *Lemon Whey*, *Cream of Tartar Whey*, *Alum Whey*, or *Tamarind Whey*, may be prepared by adding either two tablespoonfuls of *treacle*, two wineglassfuls of *sherry*, two teaspoonfuls of *lemon juice*, two teaspoonfuls of *cream of tartar*, two teaspoonfuls of *alum*, or two tablespoonfuls of *tamarinds*—as the case may be—to a pint of boiling milk, and then straining. Of these, *Alum Whey* is somewhat astringent, and *Tamarind Whey* slightly aperient.

Then there are the various *meat teas*, *broths*, and *soups*—liquids containing more or less of the "goodness" of the meat from which they are prepared. There are different ways of making these. *Raw beef-tea or essence* of very nutritious quality can be made by putting half a pound of lean beef (free from fat and sinew), cut up finely, to soak in half a pint of soft water with four drops of hydrochloric acid and a tiny pinch of salt for three hours, straining and washing the meat on the strainer with a little more water. This contains a good deal of the "tissue-food" constituents of the meat, as well as the mineral matter. This, though red and "raw"-looking, is often easily taken by invalids, even by young children. An excellent receipt is given by Dr. Cheadle, as follows:—"Raw meat juice should be prepared by mincing finely the best rump steak, then adding cold water in the proportion of one part of water to four of meat. This should be well stirred together, and allowed to soak for half an hour, cold. The juice should then be forcibly expressed through muslin by twisting it." Good nutritious *beef-tea* is made also by placing a pound of finely-minced lean beef in a pint of water (in a jar, covered over at the top) for an hour: then putting the jar to stand in a saucepan of water for another hour, and gently boiling. Strain and use. Tea can be prepared from other meat, as mutton, chicken, or veal, in similar ways. When the meat is placed in a saucepan and boiled, as is the common way of preparing (what is often called) beef-tea, you have *broth* or *soup*, which contains the mineral and flavouring matters of the meat, but scarcely any of the "tissue-food" constituents. When you hear people say the beef-tea is so strong that it goes solid on cooling, it simply means that the *gelatin* has been extracted by the boiling, and this substance sets in a jelly on cooling. This has its uses, but is nothing like so nutritious as the "tissue-food" (properly so called) of the meat. "Make the cook understand," said King-Chambers, "that the virtue of beef-tea is to contain all the contents and flavours of lean beef in a liquid form; and that its vices are to be sticky and strong, and to set like a hard jelly when cold. When she understands this, let her take half a pound of fresh-killed beef for every pint of beef-tea required, and remove all fat, sinew, veins, and bone. Let it be cut into pieces under half an inch square and soak for twelve hours in one third of the water. Let it then be taken out and simmered for two hours in the remaining two thirds of the water, the quantity lost by evaporation being replaced from time to time. The boiling liquor is then to be poured on the cold liquor in which the meat was soaked. The solid meat is to be dried, pounded in a mortar, freed from all stringy parts, and mixed with the rest."

Meat jellies and *calf-foot jelly* (consisting mainly of *gelatin*) are very useful, as patients can, as a rule, easily take and digest them; and, though greatly inferior to the "tissue-foods" proper, tend to save the wasting of the body from disease. For similar reasons *clear soups and broths* are suitable; but, as Sir William Jenner long ago pointed out, the juice of fresh vegetables should be added to these. "By cooking such vegetables," says Dr Burney Yeo, "as carrot, turnip, celery, parsnip, endive, lettuce, &c., together with some aromatic herbs, such as parsley, mint, thyme, or tarragon, &c., cutting them fine, and placing them in a muslin bag, then boiling and expressing the juice into the soup; by doing this the soup or broth can be largely mixed with the juices of fresh vegetables, an important and wholesome article of diet."[1]

The various *starchy* foods are suitable; as arrowroot,[2] thin oatmeal gruel,[3] bread jelly,[4] rice or sago pudding[5] (where they can be taken), milk and ground rice or flour. An excellent preparation is made by boiling flour tightly tied up in a jar or cloth for several hours in a pan of water; then grating the hard-cooked flour thus produced, and boiling it with milk in the proportion of a tablespoonful to a pint. These starchy foods are of especial service, particularly when prepared with milk, in cases of *Diarrhœa* and *Dysentery*. Oatmeal, ground rice, arrowroot, sago, tapioca, biscuit-powder, any kind of baked flour, may be usefully added to soups and broths, making them more nutritious from the addition of "fuel-food."

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[1] *Food in Health and Disease.*

[2] *Arrowroot.*—Mix two teaspoonfuls of arrowroot with three tablespoonfuls of cold water; add half a pint of boiling water, constantly stirring. Milk may be used instead of water. Flavour with sugar, nutmeg, lemon-peel, or other spice. Add port wine or brandy, if required. (Some advise boiling for three minutes in an enamelled saucepan.)—BURNEY YEO.

[3] *Gruel* may be made with water or milk, or a mixture of both. Place two tablespoonfuls of oatmeal in a saucepan, add a little water, and mix well; add a pint of milk or water, and let it boil gently for half an hour, stirring frequently. Flavour with sugar or salt.—COSGRAVE.

[4] *Bread jelly.*—Steep stale bread in boiling water, and pass through a fine sieve while still hot. A light nourishing article for a weak stomach, which may be taken alone or after being mixed and boiled with milk.—PAVY.

[5] Take two tablespoonfuls of clean rice or sago; soak in warm water for

Drinks made from fresh fruits, as *lemonade*,[1] *orangeade*,[2] *apple water*,[3] &c., to which a little sugar is added, are very refreshing; they contain a little mineral matter (good for the blood), a little sugar (fuel-food), and a quantity of water. More nutritious drinks are *barley water*,[4] *rice water*,[5] and *oatmeal water*. *Linseed tea*,[6] is useful in chest affections; and *arrowroot and black-currant drink*[7] in colds and throat

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two hours; then drain off the water. Stir the rice in a pint of milk, add a little sugar and bake or boil for an hour.—FOTHERGILL.

[1] *Lemonade.*—Pare the rind from a lemon thinly, and cut the lemon into slices. Put the peel and sliced lemon into a jug, with an ounce of white sugar, and pour over them a pint of boiling water. Cover the jug closely, and when cold strain.—PAVY.

[2] *Orangeade.*—The juice of three or four oranges, and one lemon, with a little sugar, are to be added to a quart of cold water.—COSGRAVE.

[3] Cut up one pound of apples, each one into quarters, bake them, and put them into a jug, with half a pound of brown sugar, pour one gallon of boiling water over; let it get cold, pulp the apples, and pass the liquor through a cullender; bottle for use, taking care not to cork the bottle, and keep it in a cool place.—FOTHERGILL.

[4] *Barley Water.*—On a tablespoonful of pearl barley (washed in cold water), the rind of a lemon peeled thin, and two or three lumps of sugar, pour a quart of boiling water. Let it stand for seven or eight hours, and strain. More or less of the juice of the lemon may be added, according to taste.—BURNEY YEO.

[5] *Rice Water.*—Wash three ounces of rice well, and put it into a quart of boiling water, boil for an hour, strain and sweeten. Cinnamon may be added.—COSGRAVE.

[6] *Linseed Tea.*—Two tablespoonfuls of linseed, one pint of water, half a lemon, sugar to taste, a piece of liquorice the size of a nut. Boil an hour and a half.—RINGER.

[7] Take two large spoonfuls of black-currant preserve, boil it in a quart of water, cover it, and stew gently for half an hour, then strain it, and set the liquor again on the fire; then mix a teaspoonful of arrowroot in cold

complaints. *Fruit-soups*, made by boiling fresh or dried fruits in water, sweetening with sugar, flavouring with lemon, &c., and cleared by pressing and straining, form other refreshing drinks.

When it is desirable to give nutriment in a concentrated form, or there is a difficulty in the preparation of suitable food, one or other of the many *concentrated and preserved foods*[1] may be advantageously used; and in those serious cases where the digestive powers are greatly enfeebled or almost lost, the various *peptonised* or *predigested foods*,[2] are of the greatest use. The insoluble "tissue-food" is converted into soluble peptone in these artificially digested foods before they are swallowed; and in the best forms of these foods any insoluble starchy matter that might have been present is converted into soluble sugar, and any fatty matters are divided and broken up into the finest particles. So that really, when you give peptonised foods of any kind, you give food *already digested* and ready to be absorbed into the blood, without throwing any work on the organs of digestion. Care must be taken, however, that such foods are only given when needed, as if used for those in whom digestion is carried on fairly well, the stomach and other organs—not being called upon to go through their usual work—will forget how to act when ordinary food is again resumed.

As the patient gradually recovers the diet may be altered carefully and by degrees. *Gruel*, the different *milk puddings*, or *whiting*, boiled *chicken*, *sweetbread*, and *game*, are suitable articles to choose from as the appetite and powers of digestion increase.

The question of BEVERAGES must now be considered, viz.

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water and pour the boiling liquor upon it, stirring meanwhile; then let it get quite cold.—FOTHERGILL.

[1] Such as Liebig's Extract of Meat, Hassal's Flour of Meat, Kreochyle, Condensed Milk, and similar articles.

[2] These are to be procured in great variety; some, as Liebig's, Nestlé's, Allen and Hanbury's, Savory and Moore's, and Mellin's Infants' Foods, contain pre-digested starch, with a greater or less amount of other nutritious substances; others, as the numerous meat peptones, contain predigested meat; and yet other preparations contain predigested substances of different kinds mixed together. Peptonised milk and cocoa can also be obtained. In the case of both "predigested" and "concentrated and preserved" foods, it is well to take medical advice as to the selection of particular preparations.

Stimulating drinks—some of which do, and some do not, contain alcohol; and *water*.

Alcoholic Beverages.

These, as their name implies, owe their characteristic stimulating qualities to the spirit (or *alcohol*) which they contain. Undue indulgence in such beverages is, as all know, productive of the greatest evil; as a matter of fact, such excess is found "to cause premature old age, to produce or predispose to numerous diseases, and to lessen the chance of living very greatly," to lead to "half the sin and a large part of the poverty and unhappiness in the world."[1] It therefore becomes an interesting question as to how far indulgence in such beverages may be carried without any appreciable harm resulting. A strong, healthy man, it is found, cannot take more than from 1 to 1½ ounces of *pure* alcohol in the twenty-four hours without poisonous symptoms being produced; that is to say, from 2 to 3 oz. of brandy, or 5 to 7½ oz. of strong wine, or 10 to 15 oz. of weak clarets and hocks, or 1 to 1½ pints of average beer, in the twenty-four hours. This is the "*limit of moderation for strong men.* . . . Women, no doubt, ought to take less; and alcohol in any shape only does harm to healthy children."[2]

There seems *no need* for the *healthy* to take alcohol at all, since, for the purpose of undergoing any severe or prolonged physical exertion or mental strain, or of withstanding the effects of Tropical heat or Arctic cold, people are *better without it.* It is otherwise, however (under some circumstances), with the *feeble* and the *sick*. Thus, *small* doses of alcohol increase appetite, assist digestion, increase the frequency and force of the heart's action, *usefully* in states of exhaustion after fatigue, during acute illness or recovery from severe sickness, and in the weakly or aged. Its use in *fainting* you have doubtless witnessed. Except in this latter emergency, never give alcohol without instructions from the medical attendant. In a general way it should never be given early in the day, never on an empty stomach—always with food. A good rule laid down by King-Chambers, and endorsed by Dr. Milner Fothergill, is, "Let the alcoholic drink be limited to that quantity which increases the appetite."

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[1] *Parkes' Practical Hygiene:* Notter.

[2] *Ibid.*

These remarks refer to alcohol itself, and apply with special force to *spirits* (brandy, rum, whisky, and gin), as these consist, roughly speaking, of about equal parts of alcohol and water, flavoured in different ways. As to *wines*, these contain but a small (though variable) quantity of alcohol; in some there is much sugar (fuel-food), and in most there is important mineral matter "good for the blood." *Beers* again are weak in alcohol, but contain bitter and appetising matters, sugar, and mineral substances.

Comparing favourably in several respects with such beverages are those of the *non-alcoholic* kind, as

TEA, COFFEE, AND COCOA.

Tea and *coffee* have a stimulating and restorative effect, warding off the sense of exhaustion from over-exertion and mental worry; and the use of these beverages is not accompanied by the intoxicating effects, nor followed by the depression resulting from indulgence in alcoholic drinks. These beverages are made by pouring *boiling* water on the dried leaves of tea or the ground roasted beans of coffee; and the infusions thus made exercise their restorative effect equally in cold or hot climates, at the same time that their warmth is comforting in cold regions, and their effect in promoting perspiration in hot ones. Excessive indulgence in either tea or coffee, however, is very hurtful, and the terms "Tea-drinker's heart," "Tea-drunkard," "Coffee-drunkard," are unfortunately far from unmeaning phrases.

In the preparation of *tea*, *boiling* water is poured on to the leaves, and allowed to stand for a few minutes (*not more than five*). There is to be no boiling after the water is on the tea, or the fragrance and pleasant flavour will be driven off; neither should the tea stand for more than a few minutes, or a good deal of the astringent *tannin* (of which tea-leaves contain about 15 per cent.) will be dissolved, the result being a bitter and astringent flavour, and, to those who partake freely of it, indigestion and constipation. Hence tea which has stood or stewed on the hob is to be avoided, especially near meal times. The water used for making tea should neither be too hard (or the soluble portion of the leaves will not be dissolved readily), nor too soft (or too much of the bitter portion of the tea will be soaked out). "River water," says Dr. Pavy, "is the best, and this is employed by the Chinese."

Coffee is less suitable to delicate people, being "heavy," and more likely to cause indigestion than tea. The difficulty in preparing coffee is that boiling drives off the aroma or fragrance, while simple infusion with boiling water does not get all the goodness out of the coffee. Dr. Pavy says that "to turn the coffee to the utmost account, both a decoction and an infusion should be made; and this may be accomplished by boiling the grounds from which an infusion has been made with water, and pouring the boiling decoction over a fresh portion of recently ground coffee. The boiling water has fully extracted what the grounds would yield, and on being poured over the fresh coffee, carries with it the aroma and the principles contained in an ordinary infusion. The grounds last left, in their turn, will serve to boil with more water, and yield a decoction for pouring over another fresh portion of coffee. In this way all the goodness is obtained without any sacrifice of aroma."[1] The amount of astringent matter in coffee is much less than in tea—only about 5 per cent.

Cocoa possesses, to a slight extent, the invigorating properties of tea and coffee; its chief value, however, is as a nutritious food, for about half of cocoa is fat (called *cocoa butter*), and with this there is about 15 per cent. of tissue-food, and 10 or 11 per cent. of starchy matter. Cocoa occurs either as *nibs* (the broken, roasted kernels), or as some variety of *cocoa* (the ground and powdered kernels mixed with sugar or starchy matter). The beverage obtained by boiling *nibs* more resembles tea and coffee in its properties, since it is impossible in this way to get all the goodness out of the cocoa. But in the preparation of *cocoa*, which allows of the *whole* crushed substance of the kernel being swallowed, there is great nourishment. If sugar is used in the preparation of cocoa, then to make the beverage, "the addition of boiling milk or water suffices." Those cocoa preparations in which starchy matter is used "need boiling to properly liquefy and bring them into a homogeneous state for drinking."[2]

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[1] *A Treatise on Food and Dietetics:* Dr. Pavy.

[2] *Ibid.*

WATER

This, as already explained, is essential to health: more than half the body consists of water; our foods during digestion are dissolved in water and absorbed thus into the blood; and the waste and poisonous refuse of the body is got rid of in water by the urine, perspiration, vapour in the breath, and discharges of the bowels. Needful in health, it is urgently required by the sick; and it is both cruel and hurtful to prevent a patient having water when he craves for it. Large quantities can be conveniently given as lemonade, apple water, fruit soups, barley water, and similar drinks. The chief value of meat broths and teas, and milk (it is even urged by some observers) is due to the mineral constituents dissolved *in large quantities of water*. The bodies of patients overheated from Fevers or inflammatory disorders lose water rapidly by evaporation from the skin and vapour thrown off by the lungs during breathing: and water is needed to replace this loss as well as to dissolve and carry away by the excretions the vast quantities of refuse matter resulting from disease. Distressing thirst is often relieved by sucking small bits of ice, or by sipping cold or iced water—a teaspoonful at a time. Never be afraid of giving cold water, if the patient craves for it; but it must be *pure*, *clean*, and *in small quantities at a time*. I mention this more particularly, as a popular notion exists that pure cold water is dangerous: whereas a patient suffering from Fever or inflammatory mischief urgently requires water, either by itself or in the form of some refreshing drink.

The use of beverages and liquid nourishment prepared with boiling water, as tea, coffee, barley water, &c., is desirable for giving patients the proper amount of water in their diet, where the only water supply is suspected of being impure—since thorough *boiling* is an excellent way of purifying water.

Filtration is another plan of purifying water; and for this purpose different domestic *filters* (Figs. 20 and 21) are to be procured. All filters, however, require periodical and careful cleaning, and renewal of the substance used for filtration. Otherwise the filter will prove a curse instead of a blessing, becoming foul after constant use and polluting the water instead of purifying it. "A good extemporary filter," says Mrs. Dacre Craven, "can be made out of a common flower-pot. Place a piece of sponge in the hole at the bottom. Over this lay two inches of charcoal, and then two inches of

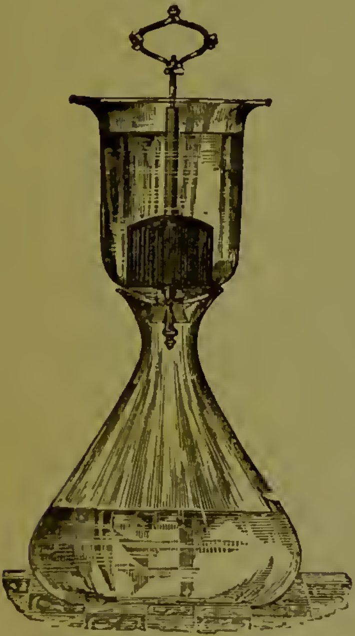


Fig. 20.—Decanter Filter.

"Of forms of domestic filter, the glass decanter with a solid carbon or silicated carbon block has the great advantage that every part of it can be seen, so that it can be kept scrupulously clean. These filters go on working perfectly well for an almost unlimited time, scarcely anything being necessary beyond cleansing the surface of the block once now and then with a hard brush."—*Dwelling Houses:* Professor Corfield.

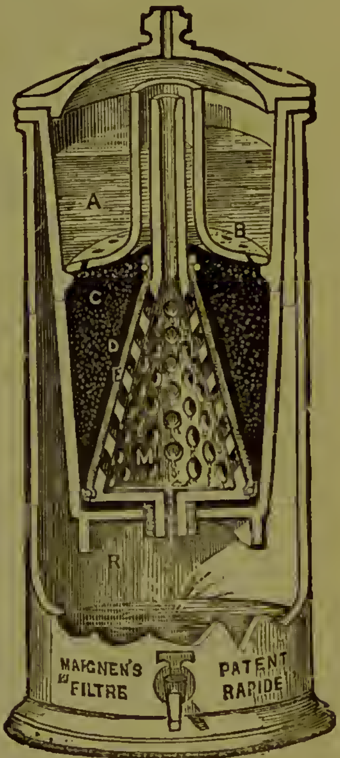


Fig. 21.

"*Maignen's 'Filtre Rapide'* consists of a strainer of asbestos cloth spread over a perforated porcelain cone. Powdered animal charcoal, or other filtering medium, is laid over the strainer. The delivery of water through this filter is very rapid, and the asbestos and powder can be easily renewed at very small cost."—*Hygiene:* Dr. Louis Parkes.

clean sand. Place this flower-pot over the jug or vessel which is to contain the water when filtered. It will be found to answer as well as any ordinary filter" (Fig. 22).

If you have reason to fear that the water supply is impure, *never forget to boil* it, as well as use your filter—if you can improvise one. Boiled water is, however, a little unpleasant and "flat," so Mrs. Dacre Craven, who never fails in resource, pours it when cold "from one jug to another a few times, so that it may abstract from the atmosphere the carbonic acid gas which it has lost in boiling. This will give it the bright sparkling appearance of water fresh drawn from a well, and it will at the same time have got rid of all inorganic impurities."

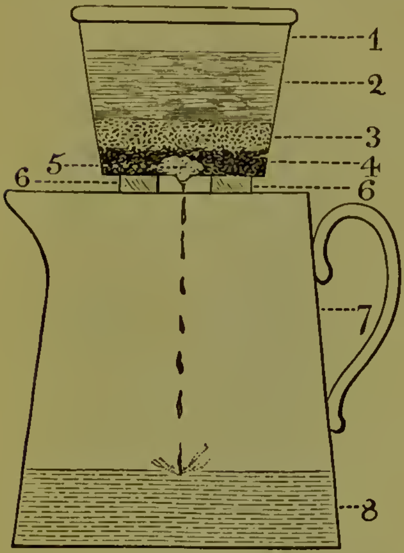
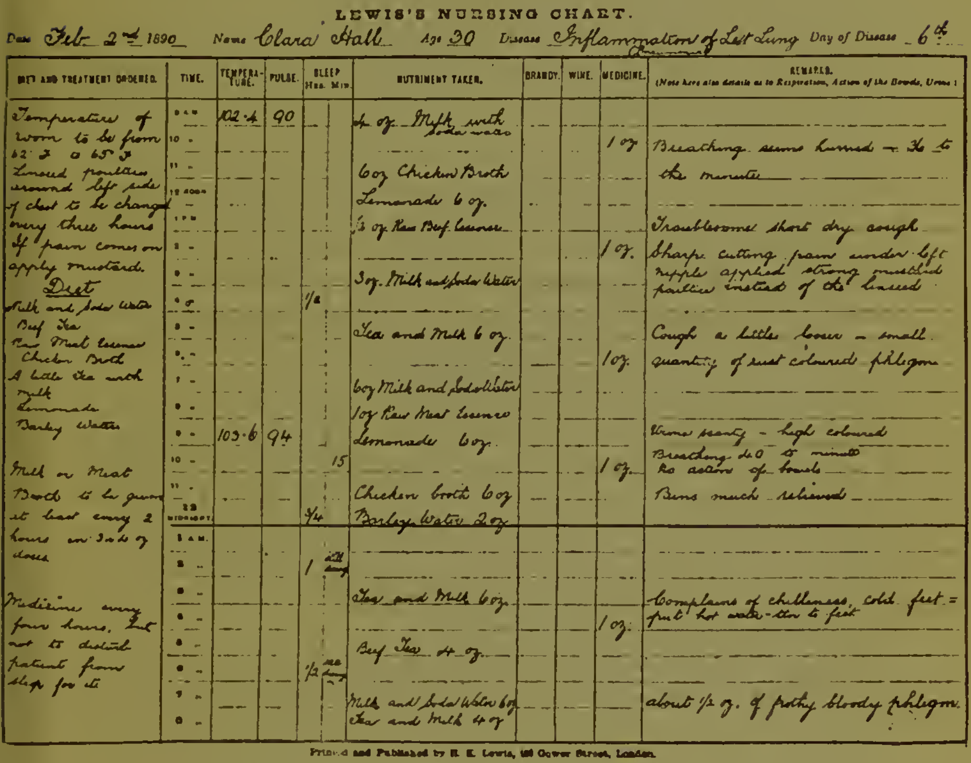


Fig. 22.—Improvised Filter (Mrs. Dacre Craven's Plan).

1, Flower-pot; 2, suspected water; 3, two inches of sand; 4, two inches of charcoal; 5, piece of sponge; 6, 6, pieces of wood supporting flower-pot; 7, jug; 8, filtered water.

There are a few precautions you should bear in mind as to the food and the feeding of the sick. Attend carefully to the instructions of the medical man as to what food you are to give, and what beverages; the frequency with which the patient is to be fed; and whether or not he is to be awakened from sleep to take nourishment. In severe illness, generally speaking, *little and often* is a golden rule for the giving of *suitable* nutriment. I lay stress on the word "suitable," as one often hears the despairing wail, "He's not eaten anything for a week," or "He can swallow no bread." In such instances, and you will often meet with them in district nursing, explain kindly to the relatives that you can give as much nourishment in the slop form as in the solid, and that in such form it is more likely to agree and do good to the invalid.

Write down on a piece of paper *what* you give in the way of food, and *at what times* you give it, being careful also to note the *amount* of nourishment taken by the patient on each occasion. An ordinary slip of paper will do for this, but it is very handy to have a proper *diet chart*, on which you can readily jot down details of the diet and other useful notes. For such a purpose, I strongly recommended *Lewis's Nursing Chart* (Fig. 23), on which the details of diet, treatment, temperature, pulse, breathing, and other particulars may be easily recorded. This is a considerable improvement on the charts commonly used.



LEWIS'S NURSING CHART.

Date Feb. 2nd 1890 Name Clara Hall Age 30 Disease Inflammation of Left Lung [illegible] Day of Disease 6th

Diet and Treatment Ordered.	Time.	Tempera-ture.	Pulse.	Sleep Hrs.	Sleep Min.	Nutriment Taken.	Brandy.	Wine.	Medicine.	Remarks. (Note here also details as to Respiration, Action of the Bowels, Urine.)
Temperature of room to be from 62° F to 65° F Linseed poultices around left side of chest to be changed every three hours If pain comes on apply mustard. Diet Milk and Soda Water Beef Tea Raw Meat Essence Chicken Broth A little tea with milk Lemonade Barley Water Milk or Meat Broth to be given at least every 2 hours in 3 to 4 oz doses Medicine every four hours, but not to disturb patient from sleep for it	9 A.M.	102·4	90			4 oz. Milk with soda water				
	10								1 oz	Breathing seems hurried — 36 to the minute
	11					6 oz Chicken Broth				
	12 NOON					Lemonade 6 oz.				
	1 P.M.					½ oz Raw Beef Essence				Troublesome short dry cough
	2								1 oz.	Sharp cutting pain under left nipple applied strong mustard poultice instead of the linseed
	3					3 oz. Milk and Soda Water				
	4			½						
	5					Tea and Milk 6 oz.				Cough a little looser — small quantity of rust coloured phlegm
	6								1 oz.	
	7					6 oz Milk and Soda Water				
	8					1 oz Raw Meat Essence				
	9	103·6	94			Lemonade 6 oz.				Urine scanty — high coloured
	10				15				1 oz.	Breathing 40 to minute No action of bowels
	11					Chicken broth 6 oz				Pain much relieved
	12 MIDNIGHT			¾		Barley Water 2 oz				
	1 A.M.									
	2			1	[illegible]					
	3					Tea and Milk 6 oz.				Complains of chilliness, cold feet = put hot water-tin to feet
	4								1 oz.	
	5					Beef Tea 4 oz.				
	6			½	[illegible]					
	7					Milk and Soda Water 6 oz				about ½ oz. of frothy bloody phlegm
	8					Tea and Milk 4 oz				

Printed and Published by H. K. Lewis, 136 Gower Street, London.

Fig. 23.—Notes of an imaginary case on *Lewis's Nursing Chart* (reduced in size). The size of the Chart is 10 × 8 inches.

You should be particular too when special quantities are ordered: thus, if you are told that the patient is to have 4 oz. of brandy in the twenty-four hours, it is a good plan to measure the 4 oz. and put it in a separate bottle for use; and you should note in what way the doctor desires it to be given, one tablespoonful (½ oz.) every three hours, two teaspoonfuls every hour and a half, or otherwise; and how it should be mixed, with milk, or soda-water, &c.

There must be no cooking or preparation of food in the sickroom, nor should any smell of cooking be allowed to enter the room, as such odours are peculiarly sickening to a weakly person.

Never thrust an overloaded plate or bowl before a patient;

the sight of much food of any kind is enough to take away any little appetite which the invalid may have. Just offer, without talking about it, what is sufficient and suitable for the time—it may be only a tablespoonful or a teaspoonful, every hour, or half-hour, or quarter of an hour—as the case may be. "Enough is as good as a feast," and in this instance a great deal better.

And whatever you give, give clean, with clean hands, clean cloth, clean spoon, cup, plate, glass, or feeder—whatever you use; and avoid any dripping, wet, slop, or mess, either on the bedclothes or the patient. Any awkwardness on your part, the spilling of milk, wetting of a plate, slopping over in a saucer, dripping beef-tea on the bedclothes, dropping a spoon, or similar bungling—though apparently trivial—will cause the invalid endless worry and distress.

Food should never be kept in the sickroom, so if a patient cannot finish what you bring him, take away the remnant at once. The sight of food, except at the proper moment, disgusts the invalid—it is seeing "too much of a good thing." Moreover, the eatables and drinkables get fouled by the impurities thrown off by the patient in the air of the room, and in contagious cases absorb the especial poison or contagion from which the patient is suffering.

So food and drink should be kept in a cool place apart from the sickroom; water, indeed, ought to be drawn fresh as needed—but something must always be *ready*, as the patient may call for food, and if you are not quick and handy, his desire may go before you bring the wished-for sustenance, and a chance of giving a little more nourishment is thereby lost—it may be in a critical case.

Frequently a patient is too ill to sit up for the purpose of taking nourishment, and then a *feeding-cup* (Fig. 24) or *feeder*[1] is useful; or liquids may be sucked through an india-rubber tube, or through a glass tube bent almost at right angles, the short leg being placed in the liquid, the other being sucked by the patient. When using such tubes for feeding, be careful to lift out the end from the liquid first, when enough has been swallowed,

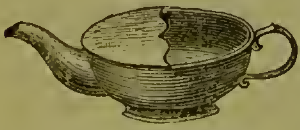


Fig. 24.—Feeding-Cup.

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[1] "An extemporary feeder can always be made out of a tea-pot." *Guide to District Nurses:* Mrs. Dacre Craven.

or the fluid will keep running on the clothes when the other end is released from the patient's mouth.

You may easily raise a patient up a little way by gently passing your arm under his pillow and slowly lifting the pillow (with his head) up. Do not lift his head too much, so as to bend his neck, or swallowing will be difficult; and keep the head as straight as you can, or the food may run out of the mouth.

Lastly, remember that the business of feeding is a very important one for the patient, on which hangs the issue of life or death ; so see that it is managed with punctuality, and that nothing is allowed to interfere with it. There should be no talk, exertion, or worry, no disturbing sounds or other distractions to unsettle a sick person just before or just after a meal—or to bother him whilst being fed. Let him eat or drink in peace, let him " do his level best " at it—*it is for life.*

LECTURE V

CONTAGIOUS OR INFECTIOUS FEVERS[1]

Specific contagious Fevers—Contagion: its nature and modes of spread—Pandemic, epidemic, endemic, sporadic, and zymotic diseases—Course of an attack of a contagious Fever—Characters and length of contagion of common Fevers—Prevention of contagious Fevers by sanitary measures, police regulations, and inoculation—Prevention of spread of contagion by quarantine or isolation, disinfectants, precautionary measures as regards sickroom and its contents, visitors, clothing, and discharges of the sick, bodies of the dead, sickroom when cleared of patients, bedding, &c., and sanitary laws.

DISEASES may be conveniently divided into two large groups,—(*a*) those which are "catching" or *contagious*, and (*b*) those which are *not* "catching."

Now, by a *contagious disease*, I mean a disease which is communicable or catching from one person to another, or from the lower animals to man, or from man to the lower animals, by reason of a special (or *specific*) poison (called *infection* or *contagion*), which is given off from the body of the human patient or the diseased animal, each contagious disease breeding and throwing off its own particular contagion or poison.

For example, a child ill with *Scarlet Fever* develops and spreads about a large quantity of the special *Scarlet Fever* poison or contagion; and this, attacking other children, produces the same disease—*Scarlet Fever*. Similarly, the contagion arising from a case of *Smallpox* gives rise to *Smallpox* in those whom it attacks. The infection of *Measles* is productive of *Measles*, the infection of *Diphtheria* gives *Diphtheria*, and so on, each contagious disease gives off in one way or another its own special (or *specific*) poison or contagion, which causes precisely the same disease (and no other) in any whom it may attack. Hence disorders of this kind are spoken of as *specific contagious diseases.*

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[1] The terms "contagious" and "infectious" are used to express precisely the same meaning—the communicability *in any way* of these diseases from one individual to another.

Then again, the diseases of which I am speaking are all marked by an overheated state of the body; the temperature of the patient's body is higher than natural; it is the chief feature of these disorders, this presence of feverishness or *fever;* hence these complaints are often spoken of as the *specific contagious* "*Fevers.*"

A patient suffering from one of these contagious Fevers becomes a source of danger to others, since the contagion given off from his body—by the breath, skin, and discharges—is diffused and spread about in various ways. Mingled and suspended in the air of the sickroom, it is inhaled (unless there is the freest ventilation) by the nurse and any casual visitors. Further, it clings and adheres to the wall-papers, ceiling, floor, and especially to curtains, valances, bedding, carpets, clothing (particularly to woollen materials), and articles of furniture.

Clothing and similar articles charged with contagion are spoken of sometimes as *fomites;* and such carriers of contagion are very dangerous, as they often spread disease when passed on from one person to another, or they may thoughtlessly be laid by for months and then worn again with the result of a fresh outbreak of Fever.

Dust and dirt, the crevices of wooden bedsteads and furniture, and even the floor, walls, and ceiling, unless these are made of impervious material, take up and absorb contagion very easily.

Passing out into the external atmosphere, contagion may be wafted considerable distances and inhaled by people quite unsuspicious of danger. The tiny particles of skin from a mild case of *Scarlet Fever*, the dried matter and scabs of *Smallpox*, may readily be carried far away by even a gentle breeze. *Influenza*, *Whooping-Cough*, *Erysipelas*, *Diphtheria*, *Mumps*, *Chickenpox*, *Measles*, *Typhus*, *Relapsing Fever*, *Smallpox*, and *Scarlet Fever* are all diseases the contagion of which is usually carried by the air.

Sometimes it happens that articles of food become polluted by contagion, as when milk is left standing in the sickroom and gets fouled by the tainted air. More frequently, perhaps, milk is weakened, for fraudulent purposes, with water—which happens to be polluted. In other instances, persons suffering lightly (or recovering) from *Scarlet Fever* or *Diphtheria* act as dairymen or sellers of milk, and the particles of peeling skin or throat discharges convert the milk they distribute so largely into a poisoned draught.

It is well to remember also that the *milk of diseased cows may produce disease.* It is now believed that cows suffer from a complaint corresponding to the *Scarlet Fever* of man, and that the milk of such animals has caused outbreaks of Fever amongst those who have used it. There is strong probability that *Typhoid* and *Diphtheria* may be produced in the same manner; and further, that the frequency of "consumption of the bowels" in young children is due to the use of milk from cows in which the udders are affected with the same disease.

The contagion of some diseases, such as *Typhoid* and *Cholera* is generally *carried and spread by water.* In these diseases the special disease poison is given off mainly in the evacuations, and as unfortunately the pollution of water by excrement is of frequent occurrence, the spread of such disorders through the medium of drinking-water is, comparatively speaking, a common event. This may appear very startling to some of you, so I will try and explain how such disgusting pollution is possible.

In considering this matter you must bear in mind the slovenly and filthy way in which human evacuations are often disposed of. In country districts these discharges are often simply thrown on to the ground, or placed in middens, cesspools, or rude holes dug in the soil. You do not notice this much, unless you make a search, as these accumulations of filth are usually put out of sight behind houses or shrubs. As a natural result, the rain washes the discharges (if on the surface of the soil) into the neighbouring wells, or it may be into streams and rivulets which go to feed a reservoir used by a water company; or soakage of the excrement (especially when in holes or cesspools) takes place into the porous soil, filtering into wells, reservoirs, and other sources of a water supply (Fig. 25). Filtration through soil of excrement, with the help of rain, may cause the polluting liquid to enter the drinking-water of a well or other reservoir in a clear, colourless, and apparently a harmless condition, but nevertheless the poison is still there—if the excrement contained, for example, only a little discharge from a *Typhoid* or *Cholera* patient. Water, polluted by the discharges of a *Typhoid* patient, has been known to still retain the *Typhoid* contagion, and actually to cause an outbreak of the disease, after filtering through the earth for half a mile.

Take again the case of a town thoroughly provided with water-closets, and a system of sewers for the removal of the evacuations. In the houses the water to flush the closets is often supplied by a pipe coming direct from the main water-pipe, or from the large tank or cistern in which the drinking-water of the household is stored; in the first case, if the water-supply is temporarily stopped, foul gas, and perhaps filth itself, is likely to be sucked up into the main pipe, which means, of course, pollution of the water-supply; in the second case, effluvia pass up into the cistern, and taint the drinking-water of the household. To avoid these great risks, a water-waste preventer cistern should be used to flush water-closets, this being interposed between the closet and the main water-supply. These dangers are increased by what is known as the intermittent system of water-supply; that is, when the water is only laid on at certain periods of the day, necessitating the storage of water in the house by means of tanks or cisterns. The waste pipes of such cisterns are too often made to enter

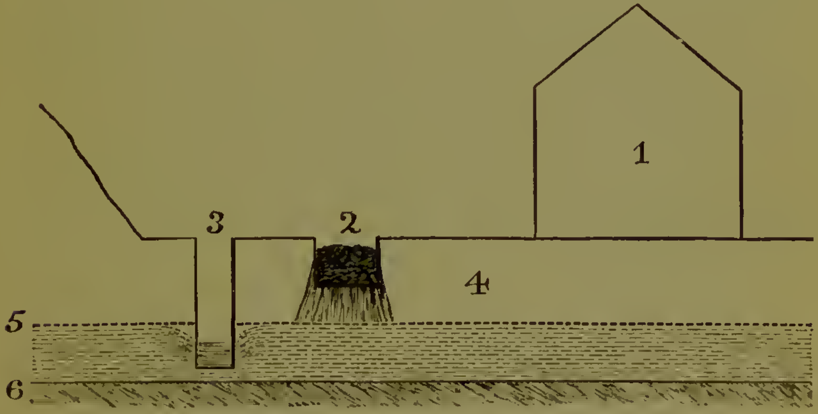

Fig. 25.—Pollution of shallow Well-water by Soakage from Cesspool.

1, Small cottage; 2, filth-hole or cesspool, 3, shallow well; 4, porous soil; 5, level of ground water in porous soil; 6, hard rock. The filth thrown into cesspool soaks through the porous soil into the ground water, which feeds the shallow well. As water is pumped out of the well the latter is replenished from the fouled ground water.

the drains directly, which constitutes yet another danger, as the foul sewage gas is apt to make its way up into the cistern and be absorbed by the water. Thus bad sanitary arrangements in houses may lead to pollution of the water-supply.

Outside the house there are other risks. The sewers are not seldom leaky, and the sewage then soaks through the soil and filters into wells, brooks, &c.; or if the sewers are laid near the water mains, and the latter are at all imperfect, sewage is sucked up into the mains when the water is turned off (whether for repairs to pipes or in the working of the intermittent system), and so the general water-supply becomes fouled.

Such facts make it clear that, without extreme care, drinking-water is very apt to become fouled by excrement, and if the latter is tainted with some special Fever-poison, then a wide-spread outbreak of disease is the certain result.

The washing of milk-cans with such be-fouled water, or as is more commonly the case, diluting milk with the tainted water for fraudulent purposes, leads to the communication of disease (*Typhoid*, for example) by milk.

Less frequently, contagion arising from infected filth and sewage poisons the air, and then people breathing the tainted atmosphere are attacked. This mostly happens from bad sanitary arrangements. Thus rain-pipes are often wrongly made to open directly into drains, with the result of effluvia passing up from the sewage and entering the house by being blown through the upper open windows.

Then, too, the water-closet, its trap, the soil-pipe, and house-drain are often—one or other of them—faulty in arrangement, so that poisonous gases from the excrement pass into the house, with the result of an outbreak of Fever, as *Typhoid*, or, as it may be, *Diarrhœa*, or sore throat.

There are several other diseases which are, as a rule, only *communicable by inoculation*, that is to say, *by the contagion entering the body through a wound, sore, or abrasion of the skin.* The poison in this way gains entrance into the tiny capillary blood-vessels, and so is swept all over the body by the circulating blood; and the same thing happens if the contagion gets into the eye, so delicate is the outer membrane of the eye, and so near the surface are the small capillaries.

Thus, *Hydrophobia* is given by the bite of a rabid animal, usually a mad dog; *Glanders* is caused generally by the discharge from the nostrils of a diseased horse getting into a scratch or other trivial wound; *Cowpox* breaks out on the hands of the milkmaid in consequence of the "matter" from the affected teats of the cow smearing the sore fingers, or is transferred from one person to another by the process you know as "vaccination"; and the fatal *Wool-sorter's disease* is usually the result of contagion from infected hides or wool getting into a scratch or abrasion on the victim's face or hands.

There are certain other very dangerous and contagious diseases which are liable to occur amongst surgical patients after operations, or those suffering from wounds or sores, when collected together in foul rooms or wards of hospitals. Such are *Hospital Gangrene* or *Mortification*, *Hospital Erysipelas*, and *Blood Poisoning*. The contagion spreads from one patient to the other through the air, or is carried directly by sponges, instruments, or dressings; in either case gaining access to the body through the wound or sore.

You can readily understand that, on account of the different ways in which contagion may spread, the outbreaks of the contagious Fevers vary much in extent and in the manner of their occurrence.

The recent *Influenza* spread rapidly over a great part of the earth's surface—becoming therefore *pandemic*.

Scarlet Fever, *Smallpox*, *Whooping-Cough*, and *Measles* are diseases which often spread very quickly, attack many persons and numerous families in rapid succession, and extend their ravages over considerable tracts of country—in a word, becoming *epidemic*.

In certain localities and districts, circumstances favour the development of one or other contagious Fever, the contagion of which—without spreading far—attacks all who come within the zone of its action. In such a case the Fever is said to be *endemic*. Thus, *Typhus* lurks obstinately in the filthy and overcrowded slums of large towns; *Yellow Fever* is always present in the West Indies, as is *Cholera* in certain parts of British India.

Lastly, cases of contagious Fever not unfrequently occur quite separately, independently, and often unaccountably without the contagion spreading to other people. Such scattered cases of diseases are spoken of as *sporadic*.[1]

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[1] There is another expression it may be useful for you to know. The

The same disease may occur in different ways. *Typhoid Fever*, for instance, is always present (that is, *endemic*) in Great Britain; it occurs now and then in extreme outbreaks (or *epidemics*), as when a large water supply is polluted by the discharges of a *Typhoid* patient; and, as is well known to all, it crops up here and there in single cases (that is, in a *sporadic* form) which frequently cannot be explained.

The special poison or contagion[1] of one or other of these contagious fevers—whether thrown off from the body of some Fever-stricken patient or developed by foul sanitary conditions—gets access into a healthy person either in the food or drink swallowed, the air breathed, or through some sore or abrasion—or even the pores—of the skin.

In whatever manner the contagion enters the body, *the course of the Fever* which ensues is somewhat as follows:

The poison or contagion gives no sign at first, but develops and multiplies, grows and increases quietly without giving rise to any particular discomfort, alarm, or uneasiness. This is the *incubation* or *hatching* period of the disease. It is the calm which precedes the storm. Some poisons take longer than others in growing, developing, multiplying, and in-

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term *zymotic* diseases was introduced (in the place of the phrases "epidemic, endemic, contagious") with special reference to *smallpox*, *measles*, *scarlet fever*, *diphtheria*, *whooping-cough*, *fever* (as typhus, typhoid, and relapsing fever), and *diarrhœa*. In a general way the word *zymotic* is often applied to such diseases as are preventible.

[1] The *contagia* or *specific poisons* (each of which on entering the body produces a special disease) appear, from our present state of knowledge, to consist of extremely minute forms of vegetable life, little organisms so small as to be visible only with the best and most powerful microscopes. These tiny but living forms of plant life are spoken of as *bacteria*, *microbes*, or *micro-organisms*. They exist in countless numbers, and are of endless variety, living and flourishing both in the atmosphere and in water; and the results of the life of these minute organisms are alike varied, wonderful, and important. Thus, bacteria of certain kinds are the *cause of putrefaction*, and if they can be excluded completely from articles of diet (milk, for example) these do not "go bad." Other bacteria *produce certain chemical changes*; one kind gaining access to milk is the cause of that liquid turning sour; and another variety turns the alcohol of wine into vinegar. Yet other bacteria during their life *produce colours*. Finally, there are bacteria which (on gaining entrance to the body of man or the lower animals by being breathed, swallowed, or through a wound or sore) *live, flourish, and multiply in the living tissues and fluids of the body, with the result that disease is set up, each variety of this class of bacteria producing its own specific disease.*

creasing to the extent necessary to produce their special effects on the body and its functions; in other words, this hatching stage varies in length in different diseases, as you may clearly see on looking at the Table A.

Then, sooner or later, as the poison increases in power, the bodily functions are disturbed, the first symptoms of disease appear—the *beginning* or *invasion* of the attack sets in. The heat or temperature of the body rises above its natural level; in a word, there commences a state of *feverishness* or *fever*, and the ups and downs or fluctuations of this fever or overheat—and the course it takes from day to day—varies with the disease. The nervous system is disturbed, as shown by shivering fits (or *rigors*) or sensations of cold down the back, headache, aching of the limbs, restlessness, sleeplessness, and it may be "wandering" or *delirium*. The digestive organs suffer; there is thirst, loss of appetite, a foul tongue, nausea, possibly vomiting or bowel disturbance. The heart and lungs are affected, the speed of the pulse increases, and the patient breathes more quickly. The skin is often dry and parched, and the urine scanty and high coloured. The patient soon becomes prostrate and feeble, and the body begins to waste.

Such symptoms may creep on very gradually and insidiously, the patient not dreaming for a week, or perhaps a fortnight, that he is about to be seriously ill, as occurs often in *Typhoid Fever*; or, on the other hand, the attack is sudden, unexpected, severe, like a knockdown blow, as in many cases of *Typhus*.

In these contagious diseases the patient becomes a source of danger to others, the contagion being given off freely from the body either in the breath, secretions, evacuations, or by the skin.

As the attack goes on the over-heated state of the body or *fever* reaches its height, the symptoms become fully developed and characteristic of the particular disorder. In many of these complaints a distinguishing *rash* or *eruption* makes its appearance—marking the *eruption stage*. The time at which the rash first appears, the appearance, distribution on the body, and changes of the rash, all vary considerably in the different diseases, as you will see on referring to Table A. In some of these complaints there is no eruption, but there are other characteristic and distinguishing symptoms; for instance, in *Whooping-cough*, there is a peculiar "crow" or

Table A.—Showing the peculiarities of, and the differences

	Name of Disease.	Average length of Incubation or Hatching Period.	Time of appearance of Rash from commencement of attack.	Character of Rash.
Eruptive Fevers.	*Scarlet Fever* . .	3 to 5 days	2nd day	Bright red blush; first on upper part of chest and neck, then spreading over body, followed by free peeling of skin.
	Measles . . .	8 to 12 days	4th day	Red spots, slightly raised, first on forehead, then spreading downwards, form crescent-shaped patches, followed by some discoloration of skin, but scarcely any peeling.
	Rötheln or German Measles	14 days	1st or 2nd day	Red slightly raised spots, sometimes slightly resembling measles, other times being rather like scarlet fever.
	Smallpox . . .	12 days	3rd day	Red shotty pimples, which become watery, depressed in the centre, then contain matter forming *pocks;* first come on forehead, then spread over body.
	Chickenpox . .	14 days	1st or 2nd day	Little clear rounded watery spots, as if caused by a shower of scalding water.
	Typhoid . . .	2 to 3 weeks	7th to 12th day	Tiny rose-coloured raised spots; scattered usually on abdomen, and few in number.
	Typhus . . .	9 to 12 days	4th to 5th day	Dusky mottling of skin, with mulberry-coloured spots; first on backs of wrists and armpits, then spreading over body.
	Erysipelas . .	10 to 14 days	2nd to 3rd day	Red, puffy state of skin, usually on face and head, tending to spread one way or another, followed by peeling of skin of the affected part.
Non-eruptive Fevers.	*Diphtheria* . .	2 to 4 days	...	*No rash.*
	Mumps . . .	2 to 3 weeks	...	*No rash.*
	Whooping-cough .	1 to 2 weeks	...	*No rash.*

[1] See Fig. 19.—

between, the more common specific Contagious Fevers.

Other characteristic Symptoms, and parts of body specially affected.	Contagion mainly given off by	Name of Disease.	
Sore throat—Tenderness and swelling of glands at angle of jaw.	The breath and discharges from throat, especially the peeling skin.	*Scarlet Fever.*	Eruptive Fevers.
Running from *eyes* and *nostrils*, soreness of *eyes* and *mouth*, *sneezing*, *cough* and *husky voice*.	Discharges from eyes, nose, mouth; the phlegm, the breath, and exhalations from skin.	*Measles.*	
Trifling soreness of throat; *no sneezing nor cough; slight enlargement of glands down sides of neck, sometimes behind ears; not specially at angles of jaw.*	Breath, and exhalations from skin.	*Rötheln or German Measles.*	
Vomiting, pain in back. Swelling of *eyelids* and *face*, soreness of *nostrils* and *throat*, discharges from mouth and nostrils.	Breath, discharges from eyes, nostrils, mouth, and throat, exhalations from skin, matter and scales from rash, particles of skin.	*Smallpox.*	
Very trifling.	Scabs from rash, exhalations from skin.	*Chickenpox.*	
Pain in *front of head*, pain and tenderness of *abdomen; diarrhœa, with liquid, offensive, yellowish, ochre-coloured motions.*	The evacuations chiefly.	*Typhoid.*	
Marked headache, *great prostration, dusky flush on cheeks, early delirium.*	Breath, and exhalations from skin.	*Typhus.*	
Feverishness, *heat, smarting, tenderness of affected parts.*	Particles of skin from affected parts.	*Erysipelas.*	
Sore throat, difficulty of swallowing, formation of whitish false membrane in throat, great weakness.	Chiefly by breath, discharges from throat, and phlegm, also by kissing.	*Diphtheria.*	Non-eruptive Fevers.
Painful enlargement of the glands (called *Parotid*)[1] below ear and angle of jaw.	Chiefly by breath.	*Mumps.*	
Similar to "cold in the head" for a week or two, then *a marked and peculiar cough, which occurs in paroxysms or "bouts," each paroxysm being a series of short expirations followed by one long crowing or whooping inspiration.*	By the breath, the discharges from the throat, and phlegm, from the commencement.	*Whooping-cough.*	

(*Parotid Gland.*)

"whoop," and in *Mumps* there is the well-known enlargement of the neck.

As the attack drags on the sufferer either becomes weaker, more delirious, and worse in every way, until he dies, or, on the other hand, he turns for the better, the symptoms of disease subside, the heat of the body lessens until it sinks to its natural level, or in other words, there is *decline* of the *fever.* In some cases the lowering of the temperature—the "decline of the fever"—is remarkably sudden and rapid, as in *Typhus,* being then often attended by profuse sweating, diarrhœa, or an immense discharge of urine;[1] in other instances, the fever subsides in a very gradual and tedious manner,[2] as is usual in *Typhoid.*

Lastly, the time that elapses between the decline of the fever and recovery to usual health is called the period of *convalescence.*

In these contagious disorders certain parts of the body usually suffer more severely than others (as shown in Table A), and it is from these especially affected parts that the contagion is chiefly given off. Thus, in *Scarlet Fever* there is marked sore throat and copious skin eruption, and the contagion is thrown off in the peeling skin, the discharges from the throat and the breath; *Diphtheria,* in which the throat is especially attacked, is spread by the breath, the throat discharges, and by kissing; in *Typhoid,* the bowels suffer severely, and the contagion is chiefly carried off by the motions; in *Cholera* the copious discharges are the carriers of contagion; in *Typhus,* the skin is much affected, and from it the infection mainly spreads; *Chickenpox* patients continue sources of contagion as long as a single dried scab of the eruption remains; *Smallpox* is spread by the matter, scabs, and bits of skin from the disfiguring rash, as well as by the breath and discharges: and in *Measles,* the skin and the air passages, the mouth and nostrils are affected, so that contagion is conveyed in the expectoration, the breath, the discharges from the mouth and nostrils, as well as thrown off by the skin.

You must never forget that a patient suffering from an attack of contagious disease—no matter how well the case is progressing, or how mild and trivial the attack—is a centre or focus of contagion, and a source of danger to his neighbours: and it is very desirable therefore that you should know how long a person who has been exposed to the contagion of one or other contagious fever should be kept apart from his fellows, and what other measures should be adopted—so as to make sure that he has not caught the disease, nor that he will carry the contagion about his clothes, &c., among others. You may with great advantage, therefore, study Table B. You should also have an idea of the length of time during which contagion lasts after an attack of one of these disorders; or, to put it in another way, you should know when a patient is free from contagion after an attack of some infectious disorder, supposing that all the clothing, bedding, and sickroom has been thoroughly cleaned and disinfected, and that the patient has been thoroughly washed. Table C gives this very necessary information.

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[1] The fever is then said to decline by *crisis,* and the accompanying perspiration, diarrhœa, or other discharge is spoken of as a *critical discharge.*

[2] The fever is then said to decline by *lysis.*

TABLE B.—Showing proper quarantine times or the periods of isolation necessary after exposure to the infection of the commoner Specific Contagious Fevers (taken from *A Code of Rules for the Prevention of Contagious Diseases in Schools, by the Medical Officers of Schools Association*).

Diphtheria	12	days'	quarantine.
Scarlet Fever . . .	14	,,	,,
Measles	16	,,	,,
German Measles (*Rötheln*, or *Epidemic Roseola*) . .	16	,,	,,
Chickenpox	18	,,	,,
Smallpox	18	,,	,,
Mumps.	24	,,	,,
Whooping-cough . . .	21	,,	,,

Disinfection at home should not be relied on, but, immediately on his return to school, the pupil should be washed with carbolic acid soap (10 per cent.) from head to foot, in a hot bath; and clothes, books, and *everything* brought back by him should be completely disinfected.

TABLE C.—Showing the length of time during which contagion lasts in the commoner Contagious Fevers, providing disinfection is thoroughly enforced (taken from *A Code of Rules for the Prevention of Contagious Diseases in Schools, by the Medical Officers of Schools Association*).

A pupil may go home, or rejoin the school, provided patient and clothes are *thoroughly* disinfected, after—

Scarlet Fever—in not less than six weeks from the date of the rash, *if* desquamation have completely ceased, and there be no appearance of sore throat.

Measles—in not less than three weeks from the date of the rash, *if* all desquamation and cough have ceased.

German Measles (*Rötheln*, or *Epidemic Roseola*)—in two to three weeks, the exact time depending upon the nature of the attack.

Smallpox and Chickenpox—when every scab has fallen off.

Mumps—in four weeks from the commencement, *if* all swelling have subsided.

Whooping-cough—after six weeks from the commencement of the whooping, provided the characteristic spasmodic cough and the whooping have ceased; or earlier, *if* all cough have completely passed away.

Diphtheria—in not less than three weeks, when convalescence is completed—there being no longer any form of sore throat, or any kind of discharge from the throat, nose, eyes, ears, &c., and no albuminuria.

Now, that you know something of the nature of these contagious Fevers, you can better understand the means taken for their *prevention*, and the methods used for *preventing the spread of the contagion* from Fever-stricken patients.

PREVENTION.—*The adoption of good sanitary measures* has a wonderful effect. The construction of a good system of sewerage, the provision of a wholesome water supply, and regular scavengering was found to reduce, in twenty-one out of twenty-four towns, the death-rate from *Typhoid Fever* as much as 45·4 per cent.; and by similar measures "*Cholera* epidemics," Dr. Buchanan tells us, "appear to have been rendered practically harmless." Again, *Typhus* is especially fostered by overcrowding and bad ventilation; it formerly was always present in our jails under the name of *Jail-Fever;* it made sad havoc among our armies and fleets, and was the scourge of populous towns. With the construction of more capacious and better ventilated houses, as well as broader and more open thoroughfares and streets, so that air can circulate freely amongst the buildings, this dangerous Fever has greatly diminished. Even during the last twenty years the death-rate from it has diminished to only one ninth of what it formerly was. As regards the *Plague*, you know how that has left us altogether, and by merely improving the ventilation of Cairo it was driven from that place also.

Such are a few illustrations of how such diseases may be prevented by proper sanitary measures. I can give you at least one example of the *prevention* of a hideous disease *by police regulations*. I allude to the ease with which *Hydrophobia* can be stamped out by the *universal* muzzling of dogs. It was shown by Professor Horsley that "in Berlin, police regulations sufficed to eradicate the disease, and that the extension of the same laws throughout the empire were having the same effect, and would be quite successful were it not that rabies was being constantly imported over the Russian frontier. In Scandinavia the result of such action is even more striking."[1]

Hydrophobia and *Smallpox* are instances of diseases which may be *prevented by a process of inoculation*.

M. Pasteur, of Paris, found that the inoculation of persons with the special poison (*weakened* by a certain process) of *Hydrophobia* caused no apparent symptoms, yet protected them from the disease, even when bitten by rabid animals. Now, of every hundred persons who are bitten by mad dogs, it is found that on the average *fifteen* are attacked in due course by *Hydrophobia* and die, whereas of every hundred persons bitten by mad dogs and *inoculated within a few days by M. Pasteur's method one or two only die*. And in these cases to which I am alluding the dogs were *proved* to be mad, so there can be no mistake as to the value of Pasteur's inoculations.

My next example is that of vaccination for prevention of *Smallpox*: this precaution should be taken during the first few months of infancy, and repeated at the age of twelve years. Even where vaccination does not actually prevent an attack, it lessens its severity, for whereas the death-rate of *Smallpox* patients varies in the unvaccinated from 37 to 64 per cent., in the vaccinated it is found to range only from 8·7 to 12 per cent. When vaccination and re-vaccination is compulsory, as has been the case in Prussia since 1874, there appears to be a chance of stamping *Smallpox* out. In Prussia, the *Smallpox* death-rate has been lowered to one tenth of its former rate, "and it is stated that in the Prussian army there has not been a single death from *Smallpox* from 1874 to the present time."[1]

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[1] *Lancet*, 23d February, 1889; for abundant evidence in the same direction, see *Public Health*, August 12th, 1891.

Prevention of the Spread of Contagion.—For this purpose it will probably occur to you that separation of the patient from his fellows—*isolation* or *quarantine*—is an excellent plan. Applied to communities, populations, and tribes of men, however, *quarantine* is usually a failure. Putting aside the sufferings, deprivations, and scenes of horror which necessarily occur among an infected population thus cut off from the rest of mankind, it is wellnigh impossible to effectually maintain a rigid cordon or blockade around the condemned district for a sufficient length of time. No matter what care is taken, individuals almost invariably get through the cordon, and communicate the disease, contagion hanging about their clothes, or themselves recovering or suffering but mildly from the dreaded Fever.

It is otherwise, however, in regard to individual cases or limited numbers of patients: here quarantine or isolation may be adopted with excellent results and in a humane manner. It is far better, when practicable, to remove *dangerous* and *extremely infectious* cases (as, for instance, *Smallpox*, *Typhus*, and *Scarlet Fever*) to a properly arranged *infectious hospital*, as in such a way they are more effectually isolated and better nursed. The same remark applies to *Typhoid*, if circumstances at the patient's home do not allow of proper nursing and the plentiful use of disinfectants. As the Medical Officer of the Local Government Board puts it, the advantage of isolation hospitals is, "as a means of preventing the spread of infectious diseases from persons who cannot be properly isolated in their own homes." Further, such hospitals should be "in readiness beforehand"—"before the invasion of actual infection." *In towns* the hospital accommodation "should consist of not less than four rooms in two separate pairs; each pair to receive the sufferers from one infectious disease, men and women of course separately.

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[1] *Hygiene*, by Dr. Louis C. Parkes.

Similar arrangements will commonly be needed for "*large villages and groups of adjacent villages.*" "Otherwise the requisite accommodation for (say) four cases of infectious disease in a *village* may be got in a suitable four-room or six-room cottage at the disposal of the sanitary authority; or by arrangement made beforehand with some trustworthy cottage holders, not having children, that they should receive and nurse, on occasion, patients requiring such accommodation." Extra accommodation may readily be arranged by the erection of tents or wooden huts, according to the season of the year.

It is not always possible to deal in this manner with dangerous infectious cases; there may not be, for example, any hospital accommodation available, so that under such conditions, and also in regard to the milder types of contagious disease, you must adopt the isolation principle at home. The sickroom should be situated in the upper story, and the whole of the upper story should be reserved and kept apart for the patient and the convenience of the attendants. The direction of the air in ventilation is upwards, and by this arrangement the contagion is carried off into the atmosphere by the chimney—the natural outlet; whereas if the sickroom were placed lower down, the upper rooms would become in all probability infected. See that the window opens properly both top and bottom, that the chimney draws well, and also that the room is sufficiently spacious.

"Ample ventilation," says the authority previously quoted, "should be enforced. It should be seen that windows are made to open, and that they are sufficiently opened. Especially where any kind of infective fever has begun, it is essential, both for patients and for persons who are about them, that the sickroom and the sick house be constantly traversed by streams of fresh air." To this end, the windows of the other rooms and of the staircase, and also the doors of the house, should be opened to the requisite extent; the door of the sickroom should be shut, and a fire kept burning, so as to keep up the circulation of air through the house as well as the sickroom. The size of the fire will of course have to be adapted to the season of the year. It is laid down that in infectious hospitals there should be at least 2000 cubic feet air space and 144 square feet floor space allowed to each patient: I mention this to give some idea of the size of room needed for a contagious Fever.

To more completely separate the sickroom from the rest of the house a sheet wet with some liquid disinfectant should be hung outside the door; and to avoid unnecessary slop and mess in carrying out this precaution *Lacy's Isolation Sheet*[1] (Fig. 26) may be procured. This consists of a tank and sheet, easily fixed by two brackets on the top of the doorway. The tank, wooden and zinc-lined, is large enough to hold sufficient disinfecting liquid, as carbolic (7½ per cent.), Condy, or Sanitas, for three or four days' use. Communicating with the tank, and running across the door, is a perforated pipe, around which the top of the sheet is sewn; and by turning a tap at the side for one or two minutes only, the disinfectant enters the pipe in sufficient quantity to damp the sheet thoroughly for from six to twelve hours. To catch and absorb any wet from the sheet, an ordinary mat is placed at the bottom. The disinfectant acts on the air coming into contact with it, as well as any suspended contagion, and thus acts as a useful barrier between the room and the rest of the house.

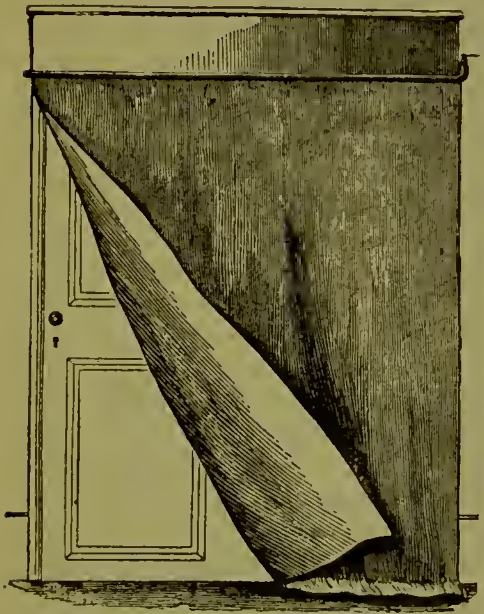

Fig. 26.—Lacy's Isolation Sheet.

The bedstead should be iron, provided with springs, and a light horsehair mattress, and placed away from the wall. Remove all bed-curtains and hangings, valances, carpets, useless contents of drawers, matting, needless furniture, &c., as such articles (especially woollen things) only serve as receptacles of contagion. The chairs are best of wood, with cane bottoms, and the nurse should be provided with a metallic bedstead or a folding-chair for resting on; *not* a heavy stuffed sofa or lounge. Indeed, furniture of any kind should be of metal, of polished wood, or marble, so as to be impervious and readily cleaned.

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[1] To be obtained only from W. G. Lacy, 82 East Hill, Wandsworth, S.W.

The nurse (or attendants) and the patient must, so to speak, keep to themselves on their own story; their food and other necessaries must be left on a table placed for the purpose outside the door of the sickroom, to be taken in when the bearer of them has gone down again.

As a rule, no one except the medical man and the nurse should be allowed in the sickroom (I shall speak of visitors presently), and the nurse should have no communication with any one else in the house, but should go straight out, if leaving for outdoor exercise, without stopping to talk or entering into other apartments. The nurse also should change her shoes or slippers, and her dress (which ought to be print, holland, zephyr, or other washable material), and wash her hands and face with carbolic soap and water, before going out. Some advise that the nurse should wear a light overall in the sickroom, removing it when she temporarily leaves. In the "*Fever* and *Smallpox* Hospitals" arrangements are made, when practicable, whereby nurses can "leave the ward half an hour before leave commences, for the purpose of entirely changing their wearing apparel, and, if possible, taking a bath."

With regard to the *visiting of patients* suffering from contagious Fevers, I advise you to carefully study the following regulations which are enforced in the "*Fever* and *Smallpox* Hospitals."

"The visiting of patients is limited to the nearest relatives and intimate friends of patients dangerously ill. One visitor only will be allowed daily to each patient. Visits are, as a rule, to be limited in duration to a quarter of an hour. In urgent and special cases, however, the Medical Superintendent is empowered to increase the number of visitors to two, and to extend the duration of the visit."

"Visitors are warned that they run great risk in entering the hospitals. They are advised not to go into the wards of the *Smallpox* hospitals without having been properly revaccinated; and, if they reside where the case visited occurred, are earnestly requested to urge the remainder of the occupiers of such house to call at once on the public vaccinator (whose address can be obtained from any of the parish officers) for the purpose of being vaccinated."

"Visitors are further advised not to enter the wards in any of the hospitals when in a weak state of health or in an exhausted condition, but to partake of a good meal before entering the hospitals. They will be required when in the wards to carefully avoid touching the patient or exposing themselves to his breath, or to the emanations from his skin, and will not be permitted to sit on the bed or handle the bedclothes, but will be allowed to sit on a chair by the bedside at some little distance from the patient."

"Visitors will also be required to wear a wrapper (to be provided by the Board) covering their dress when in the wards, and to wash their hands and faces with carbolic soap and water before leaving the hospital, or to use such other mode of disinfection as may be directed by the Medical Superintendent."

"Visitors are strongly urged not to enter any omnibus, tramcar, or other public conveyance immediately after leaving the hospital."

These regulations were framed for public institutions, but they can be readily applied, and should be enforced, in the management of contagious Fevers in private houses.

In the sickroom the greatest cleanliness is requisite; and the use of *disinfectants* (or *substances which prevent the spread of infectious diseases by destroying their special poisons or contagia*) is no less necessary. The very best disinfectant for the air of the sickroom is abundance of *fresh air*, or, in other words, the freest ventilation possible. The contagion of *Typhus* especially is destroyed or rendered harmless by mixture with fresh air; and cases of this disease should be therefore separated as widely as possible, and when practicable treated in tents, or even, if the weather is suitable, in the open air; but good ventilation is necessary in dealing with all cases of the *eruptive Fevers*, indeed of the *epidemic Fevers* generally, on account of the contagious exhalations from the bodies of the sick.

Similarly, the secretions and discharges from the sick are, one or other of them, according to the variety of fever, full of contagion, and must be guarded against accordingly. Secretions from the eyes, nostrils, and mouth, as in *Measles* and *Smallpox*, and the discharges from the nose and throat in *Diphtheria* and *Scarlet Fever*, should be wiped away by soft pieces of rag, and at once burnt. The mouth should be rinsed out in such cases, and the throat gargled, when possible, with Condy's Fluid and tepid water (a teaspoonful to about half a pint).

The face, hands, and body of the patient may be advantageously sponged too with tepid water to which Condy's Fluid is added. In cases where the skin peels off, as in *Scarlet Fever*, or the surface becomes scabby and rough with contagious scurf and matter, as in *Smallpox*, the application of camphorated oil, carbolised oil, or some ointment (as intructed by the medical attendant), serves to prevent the infectious particles from scaling off into the air of the room or on to clothing, bedding, &c., the skin being subsequently cleansed (subject to professional advice) by warm baths. Contagious phlegm or expectoration, as in *Measles*, should be received in spittoons or small vessels containing some disinfectant. In the same way contagious evacuations, as those of *Cholera* and *Typhoid* patients, should be received into vessels containing some disinfectant (as carbolic acid or Condy's Fluid), and *removed at once*, bed-pans *always* being carried covered. If any of the discharges are required for inspection, they should be kept in a vessel, with a little disinfectant, *covered*, in the closet or an adjoining room. After such disinfection of the evacuations as is practicable, "they should be disposed of without delay and under the safest conditions that local circumstances permit. They should not be thrown into any fixed privy receptacle, and above all, they must never be cast where they can run or soak into sources of drinking water." In places where there is a good system of water-closets, drains, and sewers, the disinfected stools may be thrown down the closet; but the latter, with the drains and sewers, should be well and frequently flushed with quantities of disinfectant liquid; in other localities, in which there are only privies, middensteads, cesspools, and similar arrangements, it is better to bury the stools, after disinfection, deeply in the earth, far away from any well or other water supply. Similar precautions have to be adopted in regard to the bedding, clothing, rags, handkerchiefs, towels, body linen, &c., soiled or infected by the exhalations, secretions, or discharges from the patient. Anything which is worthless should be at once burnt, otherwise such articles should be steeped as soon as possible in a bucket or tub of disinfectant liquid, or removed to a properly constructed apparatus for disinfection by heat.

The authorities recommend, "for the purposes of the sick-room, such as the reception of soiled handkerchiefs, sheets, and the like, as well as for the swabbing of floors," a disinfecting solution "made with ½ oz. *corrosive sublimate*, 1 fluid oz. hydrochloric acid, and 5 grains of commercial aniline blue, in 3 gallons (a bucketful) of common water. It ought not to cost more than 3*d.* the bucketful, and should not be further diluted." Wooden or earthenware tubs or buckets (*not* metallic) should be used with this liquid, and things steeped in it should be soaked for some hours in common water before being washed. The same disinfecting solution "in ample quantity" is recommended for treating "in detail" the evacuations of *Cholera* and *Typhoid* patients.

Another useful disinfectant liquid employed for the same purposes is *carbolic acid* solution—a pint of the crude acid solution to two gallons of water.

Burnett's Fluid (solution of chloride of zinc), in the proportion of 1 oz. or 1½ oz. to a gallon of water, is another liquid used sometimes in the same way. This is recommended, too, for use in small vessels or spittoons to receive contagious expectoration. In using these liquids, all soiled linen, clothing, &c., must *at once*, as soon as the articles are done with, be immersed in the disinfecting solution, and after soaking for several hours should be well boiled in common water. Articles, as blankets or bedding, which will not stand boiling water, should be sent enveloped in a sheet wet with strong disinfectant, and in a proper conveyance, to be disinfected in a special apparatus by heat, or if there is no such apparatus available and the articles cannot be burnt (which is the best plan), they must be dealt with as hereafter described in connection with the final purification of the sickroom. But *under no circumstances* may infected articles be sent out to the wash or anywhere in fact out of the sickroom except for disinfection with due precautions. It must be borne in mind that these disinfecting liquids are poisonous, especially the corrosive sublimate and carbolic solutions. Much caution is needed therefore for the prevention of accidents; the corrosive sublimate solution is coloured, so "that it shall not readily be confused with drinks or medicines," and the carbolic solution has a peculiar and characteristic odour.

Condy's Fluid is another disinfecting solution, and is *not* poisonous; it is especially useful as a *deodorant* (or substance which removes smells), as it destroys decaying or putrefying organic matter, and makes a good wash for wounds, ulcerated and foul throats. It is not so powerful as a *true* disinfectant or destroyer of the special poisons which are the cause of Fevers.

Chloride of Lime solution has a rather disagreeable odour, and is mainly used for disinfecting drains, privies, and cesspools.

There are many other disinfecting substances available, of variable power, such, for instance, as the liquids *Terebene* and *Sanitas*, both of which are non-poisonous and of pleasant odour, the powders *Cupralum*, *Ferralum*, and many others.

Among the precautions to be adopted in the sickroom the plates, cups, saucers, glasses, and similar articles must not be forgotten; these should be washed in hot water to which Condy's Fluid has been added, and thoroughly cleansed and disinfected before further use.

The little *clinical thermometer* (Fig. 29), too, with which (as I shall explain another time) you test the heat of the patient's body, should be cleansed with disinfecting solution (as Condy or carbolic) after each time that you use it.

Lastly, a basin of water to which some disinfectant (as Condy or carbolic) has been added should be placed near the patient, so that the nurse may dip her fingers into it after assisting the patient or handling infected articles.

Besides the disinfcetants in a liquid form which I have mentioned, there are others in the shape of *gases* that are recommended for purifying the air of the sickroom, but these are not of much service, because they must be used in quantities poisonous to man in order to destroy contagion.

Such substances are *sulphurous acid gas*, or the fumes of burning sulphur; *chlorine*, which is given off in small quantity from chloride of lime and water, especially if a little oil of vitriol is added; *nitrous acid gas*, formed when dilute nitric acid is poured on to copper filings; *iodine*, which evaporates when warmed; and *euchlorine*, given off when a little chlorate of potash is dropped into strong "spirit of salt."

These gases may be used in small quantities in the sickroom, but their effect, beyond the concealing of bad smells, must be limited, since they cannot be borne in any amount by reason of their suffocative and irritative odours. The best purifier of the atmosphere of the sickroom is fresh air and plenty of it; in other words, good ventilation. In outbreaks of *Cholera* and *Smallpox certain special precautions are necessary.* In *Cholera* epidemics the disease often begins with slight diarrhœa, so that if all persons complaining of even slight relaxation of the bowels are promptly treated, much danger and suffering may be averted. When *Smallpox* breaks out all persons in the infected house or district should be immediately vaccinated. Newly-born children, it is found, can bear the little operation quite safely. All those, too, over the age of ten years under such conditions of danger should be at once *re*-vaccinated. Persons so "protected" can live and perform their duties safely in *Smallpox* hospitals full of patients, whereas the contagion of the disease strikes outsiders who have neglected similar precautions. In case of *death from any dangerous contagious disease*, the body should be enveloped in a sheet wet with the carbolic acid solution or other strong disinfectant, and interred as soon as practicable. In districts containing a public mortuary the body should be removed to it; but in all instances an early burial is especially desirable.

After the sickroom is cleared of its occupants the room itself, together with the furniture, bedding, clothes, and everything which has been exposed in any degree to contagion, must be effectually purified and disinfected. Useless articles, or infected materials of trivial value, should be burnt. Sheets and washable fabrics, after steeping in some disinfecting solution (as previously described), ought to be well and thoroughly boiled, since it is found that the specific disease poisons are destroyed when freely exposed to boiling water or steam at 212° F. for the space of five minutes. "It is necessary, however, that before boiling, the grosser dirt should be removed by a preliminary soaking in cold water. This should be done before the linen leaves the infected place."[1] And of course there should be "due precautions against reinfection" after the articles have been boiled. There are many materials which are spoiled by boiling, such as bedding, carpets, blankets, cloth clothes generally, pillows, mattresses, and similar articles, and these should be conveyed (with proper precautions) to the public disinfecting apparatus provided for the district—supposing such a convenience exists. An apparatus of this description is constructed to disinfect the articles either by *dry heat* or (better still) by *superheated steam.* When *dry heat* is used the articles should be opened out and completely exposed for at least three hours to a temperature of 220° F. or 230° F.; but this method has the disadvantage of injuring to a greater or less extent the nature of the materials. *Superheated steam* is greatly preferable, on account of the readiness with which it penetrates bulky objects and destroys the special disease poisons; "it is on these grounds especially adapted for the purification of bedding, bales of rags, large bundles of clothing, and other objects difficult of penetration."[1] The great advantages of this method are clearly set forth by Dr. Edward Willoughby, who remarks that "there can be no question as to the immense superiority of Lyon's apparatus, in which hot air, fully saturated with vapour, but not perceptibly wet, at a temperature of 300° F., is forced under pressure into the interior of the thickest mattresses, obviating the necessity of taking them to pieces, and without injury to the texture or colour of the most delicate fabrics, as silks or ostrich feathers."[2] Should there be no disinfecting apparatus available, it is better to burn mattresses and bedding which are badly soiled after the exposure to the contagion of a dangerous disease; but if this extreme measure is objected to, the bedding material, cushions, pillows, and other infected articles, which cannot be boiled, must be freely opened out and spread or hung on lines or rails in the room. The chimney should then be blocked up, and also the windows tightly shut, every crevice as far as possible being closed by paper pasted over it; drawers should be opened widely, and cupboard doors thrown open. Roll sulphur or brimstone should next be placed in a metal vessel (such as a good-sized saucepan-lid or a pan), in the proportion of at least 1 lb. of sulphur to 1000 cubic feet of room space, and a little spirits of wine added to it. The dish of sulphur being placed in the middle of the room, and fixed for safety with tongs or irons over a tub or bath of water, the spirits of wine should then be lighted, and, all retiring immediately from the room, the door must be tightly secured. The room should be left closed for *at least six hours*, in which time the sulphurous acid given off by the burning brimstone will have destroyed all contagion. The authorities say that "the amount of sulphurous acid required for the disinfection of a moderate-sized room can be obtained by burning 1½ lbs. of sulpur (roll brimstone) in a pipkin over a small fire placed in the middle of a room with an old tray or the like to protect the flooring."

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[1] *Disinfection by Heat*, by Dr. H. F. Parsons.

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[1] *Disinfection by Heat,* by Dr. H. F. Parsons.

[2] *Principles of Hygiene,* by Dr. Edward Willoughby.

After this fumigation the door and windows should be widely opened and the chimney flue cleared, so as to admit of the freest ventilation throughout the apartment for one or two days at the least. The floor and furniture should then be well scrubbed with soft soap and carbolic acid solution (a pint of the crude solution to 3 or 4 gallons of water), the wall paper should be removed and burnt, and the walls and ceiling limewashed.

Besides all this, the closets, drains, and sewers must be flushed plentifully with disinfecting solution, and any accumulations of dangerous filth in privies, ashpits, &c., should be removed with the aid of disinfectants. For this purpose sulphate of iron (or green copperas) is recommended, either in a strong solution or as a powder, "in quantity sufficient to destroy all odour."

Such are the means at our disposal for arresting the spread of the contagious febrile diseases; but there are also certain highly important rules to be carried out, in furtherance of the same ends, which are enforced by law. It is therefore very necessary that you should be acquainted with your duties in connection with infectious diseases as laid down by the sanitary laws. In the first place, it is enacted by the INFECTIOUS DISEASE (NOTIFICATION) ACT, 1889, that if *Smallpox*, *Cholera*, *Diphtheria*, *Membranous Croup*, *Erysipelas*, the disease known as *Scarlatina* or *Scarlet Fever*, and the Fevers known by any of the following names, "*Typhus*, *Typhoid*, *Enteric*, *Relapsing*, *Continued*, or *Puerperal*,"[1] occurs in any building (except an infectious hospital), notice thereof must be given at once to the medical officer of health of the district, by the head of the family to which the patient belongs, or failing him by the nearest relatives, the person in charge or attendance on the patient, or the occupier of the building. Persons failing to give such notice are liable to a penalty of two pounds. Similar notification is also compulsory on the medical man attending the case. The importance of this law is clearly very great, as it enables the Local Authorities to take measures for stamping out a contagious disease at its first appearance, before it becomes fanned into an epidemic; there is a chance of discovering the actual source of the attack; various sanitary measures can be immediately put in force; and children from the infected buildings can be restrained from mixing with other families and from attending school.

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[1] The provisions of the Act may be applied, under certain circumstances, to any other infectious disease.

Then, again, it is enacted by the PUBLIC HEALTH ACT, 1875, that "Any person who (1) While suffering from any dangerous infectious disorder wilfully exposes himself, without proper precautions against spreading the said disorder in any street, public place, shop, inn, or public conveyance, or enters any public conveyance without previously notifying to the owner, conductor, or driver thereof that he is so suffering; or (2) Being in charge of any person so suffering, so exposes such sufferer; or (3) Gives, lends, sells, transmits, or exposes, without previous disinfection, any bedding, clothing, rags, or other things which have been exposed to infection from any such disorder, shall be liable to a penalty not exceeding five pounds."

"Every owner or driver of a public conveyance shall immediately provide for the disinfection of such conveyance after it has to his knowledge conveyed any person suffering from a dangerous infectious disorder; and if he fails to do so he shall be liable to a penalty not exceeding five pounds."

"Any person who knowingly lets for hire any house, room, or part of a house in which any person has been suffering from any dangerous infectious disorder, without having such house, room, or part of a house, and all articles therein liable to retain infection, disinfected to the satisfaction of a legally qualified medical practitioner, as testified by a certificate signed by him, shall be liable to a penalty not exceeding twenty pounds."

"For the purposes of this section, the keeper of an inn shall be deemed to let for hire part of a house to any person admitted as a guest into such inn."

"Any person letting for hire, or showing for the purpose of letting for hire, any house or part of a house, who on being questioned by any person negotiating for the hire of such house or part of a house as to the fact of their being, or within six weeks previously having been, therein any person suffering from any dangerous infectious disorder, knowingly makes a false answer to such question, shall be liable, at the discretion of the Court, to a penalty not exceeding twenty pounds, or to imprisonment, with or without hard labour, for a period not exceeding one month."

The INFECTIOUS DISEASE (PREVENTION) ACT, 1890, contains several very important clauses:—Local Authorities can enforce "the cleansing and disinfecting of any house, or part thereof, and of any articles therein likely to retain infection," in order "to prevent or check infectious disease:"[1] and can also compel, under a penalty of ten pounds, "the owner of any bedding, clothing, or other articles which have been exposed to the infection of any infectious disease, to cause the same to be delivered over to an officer of the Local Authority for removal for the purpose of disinfection." Any person ceasing to occupy houses or rooms in which cases of infectious disease have occurred within six weeks previously, without having such houses and their contents properly disinfected; or without giving the owner of such houses notice of the previous existence of such infectious disease; or who on being questioned by the owner, or by any person desirious of hiring the house, as to the previous existence of infectious disease, "knowingly makes a false answer to such question," is liable to a penalty of ten pounds.

No one is allowed, without the written sanction of a medical man, to keep "the body of any person who has died of any infectious disease" in a "dwelling-place, sleeping place, or workroom, for more than forty-eight hours."

It is unlawful to remove the body of any person who has died from an infectious disease from any hospital or place of reception for the sick, except for the purpose of burial, if a medical practitioner has previously certified that such a course is not desirable on account of the "risk of communicating any infectious disease or of spreading infection."

It is an offence to hire or use a conveyance (other than a hearse) for carrying the body of a person who has died from an infectious disease without previously informing the owner or driver, and the owner or driver of such conveyance shall "immediately afterwards provide for the disinfection of such conveyance."

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[1] The term *infectious disease* includes the diseases enumerated in the Infectious Disease (Notification) Act, 1889; and as in the latter, the provisions of the Act, 1890, may be applied, under certain circumstances, to any other infectious disease.

Any person suffering from an infectious disease, in an hospital for such cases, may be detained in the hospital, on an order from a Justice, if it is known that on leaving the hospital he could not be provided "with lodging or accommodation in which proper precautions could be taken to prevent the spreading of the disorder from which he is suffering."

"Any person who shall knowingly cast, or cause or permit to be cast, into any ash-pit, ash-tub, or other receptacle for the deposit of refuse matter any infectious rubbish without previous disinfection, shall be guilty of an offence under this Act."

LECTURE VI

OBSERVATION OF THE SICK

How and what to observe—Face—Skin—Posture—Pain—Sleep—Rigors or shivering fits—Tongue—Appetite—Thirst—Vomiting—Evacuations—Urine—Urinometer—Urine-testing—Breathing—Cough—Expectoration or Phlegm—Spittoons—Pulse—Palpitation—Delirium—Insensibility, Paralysis, and Fits—Temperature of body—Clinical Thermometer and its use—Fever, primary and secondary—Temperature charts.

One of the most important duties of a nurse is well and shortly described as *Observation of the Sick.* A medical man cannot be constantly with the patient, and it is therefore necessary, in any serious case, that the progress and fluctuation of the symptoms should be carefully watched, and the onset of new symptoms as diligently noted, by some good observer, who may duly report thereon to the doctor at his visit.

Now, the nurse is most favourably placed for carrying out this duty, and with moderate tact she may easily keep a sharp watch on the varying phases of the disease, without being fussy or obnoxious, and without irritating or alarming the patient. If the nurse cannot remember what she observes, she should be careful to *write down* the results of her observations,[1] simply to record the facts as she sees, hears, or otherwise notices them, with the time of their occurrence and their duration. And a careful record or register of the incidents of a case, made in such a way, is of the greatest assistance to the doctor, enabling him to understand more clearly the state of the patient and the point at which the disease has arrived since his last visit. But the nurse's report must be a record of *observed facts,* not of opinions or criticism. It rests with the medical man to form his own conclusions as to the meaning, interpretation, and significance of the facts aid before him, in the order of their occurrence, by the nurse. You must therefore see that, for the doctor to have a fair chance of arriving at true conclusions and of forming correct opinions, it is necessary for the nurse to report *accurately* the facts and incidents of the case as they actually occur, and not what she thinks about them. And without practice and experience this is a much more difficult matter than at first may appear to you. Even the best of us may, and often do, confuse actual facts with what we *think* are facts, and with the opinions and views we form as to the meaning of such facts. It is necessary, therefore, for a nurse to practice diligently the *habit of close observation*, and to note literally that which she sees, hears, smells, or feels, as distinguished from that which she infers from her observations.

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[1] *Lewis's Nursing Chart* (Fig. 23) is very convenient for this purpose.

The habit of close observation is moreover necessary to enable the nurse to perform her duty properly to the patient, to minister to his wants, to use means for temporarily relieving pain or other distressing symptoms—pending the doctor's visit. A good and watchful nurse seldom needs a call, a request for help, or a reproachful word from her patient; she is quick to perceive any sign of discomfort, a slight change of colour, expression of pain, or other mark of suffering, and hastens promptly—without waiting to be asked—to adopt immediate measures of a temporary character for the relief of the invalid. This duty of observing the patient, however, must not be carried out by the nurse in anything like a repugnant, offensive, or obtrusive manner; nothing excites such irritation and dislike in a patient as the thought that he is being constantly stared at. This warning is not an idle one, as I have known even a trained nurse habitually sit facing and constantly glaring at a patient in a way that produced the greatest restlessness and irritation.

A few hints as to *what to observe* may not be out of place here. You naturally notice first a patient's *face*, and much may be learnt often from its colour, expression, and general aspect. Thus, sudden paleness of the face and lips shows faintness, for which the head may be gently lowered by altering or removing the pillow, smelling-salts may be applied to the nostrils, water or eau-de-cologne to the forehead, and a little water or very weak stimulant given to drink.

A dusky tint of the features and purplish hue of the lips, on the other hand, may be due to some difficulty in breathing, for which temporary relief may sometimes be given by a raised or half-sitting posture.

Or you may note the yellow tint of jaundice, the peculiar tallow-candle hue caused by a poor condition of the blood, the muddy complexion with darkness under the eyes resulting from biliousness, the flush of fever, or the alternate flushing and paling of extreme weakness.

Pain, fright, annoyance, and nervousness are each accompanied by characteristic changes of expression.

Drawing of the mouth to one side, squint, or one-sided distortion of the features may be noted, as in paralysis.

The state of the *skin* generally should also be noted. I shall explain later on how you may correctly find the heat (or *temperature*) of the body; but sometimes you *feel* the skin to be dry and parched, burning and pungent, as in some acute inflammatory attacks, while on other occasions it may be literally bathed in perspiration. Copious sweating may be a good sign, as when it occurs at the crisis of some contagious Fever; or of evil omen, as the night sweats of *Consumption;* or characteristic of the disease, as the profuse, nauseous, sour sweating of *Rheumatic Fever.*

The appearance of any rash or eruption should be noted, and the position and time of its first appearance. I have already told you of the peculiar rashes of some of the contagious Fevers, which differ much one from the other, as shown by Table A. I may allude to a few more examples here. *Shingles* occurs as groups of blebs or vesicles on red inflamed patches of the skin, and is often accompanied by sharp neuralgic pains. Usually met with around one side of the chest, it may occur over an eyebrow, or in other situations.

When there is much sweating, as, for instance, in *Rheumatic Fever* and some inflammatory attacks, great numbers of tiny vesicles or blebs make their appearance, perfectly clear and transparent. These are simply the result of the profuse and sudden perspirations.

Nettle-rash is another illustration of a skin eruption which you may often meet with; it occurs as rosy wheals or little swellings, similar to those caused by the common stinging nettle, and is accompanied by intense smarting, itching, and tingling. Then there are the parasitic affections of the skin, as *Itch*, caused by the burrowing of the tiny Itch-insect in the skin, giving rise to an eruption at first between the roots of the fingers and about the wrists, with intense irritation and itching; or *Ringworm*, produced by a minute fungus, showing itself in bald irritable patches on the head, or itching pinkish rings elsewhere on the body; or *Lice*, which cause so much irritation that the patient often scratches himself till the blood flows.

You should always be specially careful to report the case of any child or young person in which you notice the skin is peeling freely off, as in all probability it will prove to be the final stage of *Scarlet Fever*, and a fruitful source of infection.

Puffiness or swelling of any portions of the body should be noted, as such enlargement may have a very serious meaning. Thus, the feet and legs may be swollen, white and glazed looking, and on gently pressing the part with your finger the depression you make remains for some time—in other words, the limb "pits on pressure." Such swelling is due to the presence of watery fluid in the tissues underneath the skin, the limbs are dropsical, as may be frequently seen in cases of heart disease. The same thing may be noted in the eyelids sometimes, which become so puffy and swollen that the eyes can be scarcely opened, as is seen often when the kidneys are diseased. Large quantities of watery fluid may be poured too into the cavities of the body, causing enormous enlargement, as in dropsical distension of the belly from liver disease.

The application of hot water affords relief in some of the above-mentioned conditions of the skin; thus, sponging with very hot water checks the intense sweating of consumption; warm sponging too gives ease in inflammatory attacks, as *Measles*, where the hands, face, or other parts are puffy, tense, and irritable. Warm baths are soothing in *Nettle-rash.* The greatest cleanliness is necessary in dealing with the parasitic skin affections; and in the case of body *Lice* the linen of the patient must be thoroughly boiled.

The *position of a patient* and *the changes of his posture* are of much importance. In chest complaints, as severe *Bronchitis*, *Asthma*, &c., where the breathing is difficult, and in certain cases of heart disease, the invalid is forced to rest in a sitting-up or even in a stooping posture, otherwise he "cannot get his breath." As the disease lessens he is able to lie down like another person.

Again, in severe abdominal complaints, as *Inflammation of the bowels*, or *Colic*, the patient lies in a sort of doubled-up position—on his back, with the knees drawn well up, whereas when he gets better, he gradually falls back to his usual horizontal posture.

When one side of the chest is severely diseased, as in *Pleurisy* or *Pneumonia*, the sufferer naturally lies on the diseased side (which is unable to work), so that the opposite healthy lung may have free play and liberty of action.

In prolonged and exhausting diseases, such, for instance, as a bad case of *Typhoid*, the patient is so terribly weak and helpless that he lies flat and unable to move, and so slips downwards off the pillow, but as strength gradually returns he begins to change his posture, as he feels weary and uncomfortable.

To take a trivial though sufficiently painful ailment as another example, many of you perhaps know from personal experience the peculiarly lob-sided and askew position in which the head is placed from a "stiff neck," and you doubtless also remember how easily the head reassumes its natural erect pose when relief is obtained.

So, from these few illustrations, you may readily see that a particular position, or change of position, may point to an enfeebled condition of body, some especial kind of disease, or to a change in the patient's state either for better or worse.

It is part of your duty to help the patient to lie in that posture which may be easiest, most comfortable, and best for him, and to that end suitable arrangements should be made with pillows, and in some instances a bed-rest of one kind or another. A roller-pillow, as previously described, is useful to hinder a very helpless patient from slipping down the bed. Great care must always be taken in long cases that the patient does not lie perpetually in the same position on the back, as there is a tendency, under such circumstances, to the formation of *Bed-sores*, and also to *Congestion of the lungs;* the former being brought about by the interference with the circulation of the affected parts by the constant pressure of the under bedclothes, and the latter by the undue collection of blood in the most dependent parts of the lungs from inability of the weakened heart to carry on the circulation of blood through the lungs.

Much watchfulness must be exercised also that the patient does not move too suddenly or rise too quickly when he is in an exhausted state, or the heart's action may fail, fainting being the result—and possibly death.

The *occurrence of pain* should always be carefully noted, together with its character, degree of severity, position, time of commencement, and duration.

Pain varies much in character. It may be shooting, darting, and severe, as in *Neuralgia*, special illustrations being *Tic* and *Sciatica.* Such pain often occurs with great severity for a certain period in the day, then ceases, only to come on again after a time, and so on coming and going. Pain may be cramping, twisting, as in *Colic;* aching, gnawing, and wearing, as in *Rheumatism;* or like a "stitch in the side," which catches the breath, as in *Pleurisy.* In this last variety the patient is afraid to take a deep breath or to cough, as the pain is so increased as to seem as if a knife was being driven into the side. Of course *pain may be present in any degree of severity;* it may be so terrible, as in bad *Colic*, that the sufferer rolls about on the floor in his intense agony, or, on the other hand, it may be very trifling. Some persons bear pain much better than others, and some really do not appear to suffer from the effects of pain as others do—this is noticeable in everyday life.

The *position of the pain* should be noted as nearly as possible; to find the locality it is a good plan to ask the patient to put his finger on the place, and in this way you can often fix on the exact spot. This can be done sometimes, for instance, in *Pleurisy.* In other cases again, the pain may extend over a large space, as over the whole belly in severe *Inflammation of the bowels.* Sometimes, too, the pain is close to the surface, and then slight pressure often increases it; in other cases it is far down, and made worse by deep pressure, slight pressure not affecting it.

It does not always follow that the disease is in the same place as the pain, however; as, for example, in the frequent instances of pain in the temple or face from a decayed tooth.

You should be careful to note *the time at which the pain begins*, and *whether it appears to be connected with anything the patient does, or with any external conditions*, as noise, light,

&c. Thus, in many chest complaints the pain is increased by coughing and deep breathing; in stomach disorders, by taking food; in muscular affections, as *Lumbago* and "stiff neck," by certain movements; in diseases of the eye, by light; and in some kinds of headache by sound. In *Rheumatic Fever*, in which the joints are severely affected, the slightest vibration of the bed suffices to throw the patient into an agony of pain.

The *period of the twenty-four hours in which the pain chiefly occurs* is important: thus, in certain varieties of *Rheumatism* the pain is always worse at night, whereas in other kinds of the same disease the patient suffers most in the daytime. In some cases too, as in certain instances of *Neuralgia*, the attacks come on at the same hour daily and last the same time. Lastly, the nurse should observe the duration of the pain, whether it is increasing or decreasing in severity, and also *those measures which seem to afford greatest relief.*

In different cases various means are of service for easing pain; such, for instance, as the application of *heat with moisture* (by poultices, fomentations, and hot baths), *heat alone* (by hot flannels, hot water bottles, bags of hot bran, &c.), *cold* (by bladders of ice and cooling lotions), *counter-irritants* (as blisters and strong mustard plasters), also by *supporting the affected part* with pillows or slings, keeping the painful limb raised up above the level of the body—by placing the patient in a comfortable and easy position, and by other means not necessary for me to allude to here,

Sleep.—I have already told you that grown-up people need about seven to nine hours' sleep, and the young still more in the twenty-four hours; speaking generally, a sufficient night's rest for the healthy is obtained by retiring to bed about eleven to twelve and rising in the morning between six and eight. There is too often this difference, however, between the healthy and the sick; the former sleep when they go to bed, the latter *do not*. So it is of importance that the nurse should note the length of time that the patient sleeps, and also whether his repose is restful or the reverse, and whether he starts and jumps or is quiet. As improvement in health progresses sleep comes more naturally, and then it often becomes a most important question, to be settled by the doctor, whether the patient is to be awakened at regular intervals to be fed, or not. But you may take it as a general rule that the patient should always be given some light, easily digested nourishment the last thing before he composes himself for the night : and this precaution, if quietness, darkness, and warmth are provided, will often help the invalid to a restful sleep. The nurse, however, should be careful to watch the patient as he slumbers, especially if aged or very weak, and if the face becomes pale rather suddenly or alters in expression, or if the breathing appears to fail, she should awake him for the purpose of giving suitable nourishment. In the early hours of the morning it is often necessary to give a little warm food, and to apply hot water bottles to keep up the failing powers of a feeble invalid.

The occurrence of *rigors* or *shivering fits* should be noted, with the time of their appearance, their severity, duration, and frequency. These differ much in intensity, some being very trifling—mere cold sensations and trembling down the back, others being quite the opposite, the whole body shivering violently, the teeth chattering, and the bed shaking. These rigors frequently mark the invasion or commencement of Fevers or inflammatory attacks, and though the sufferer complains bitterly of cold, and calls for clothes to be heaped on him, and for hot bottles to his feet, a thermometer placed in his armpit shows the temperature to be rising rapidly to fever height ; and they are of no less importance when occurring during the course of any disease, as they then point to the probable development of some local inflammation complicating the disease for which the patient is being treated. During these rigors hot-water bottles should be put to the feet, warm light clothing wrapped about the patient, and warm *non*-alcoholic drinks given. There is often, and perhaps not unnaturally, a great desire among the friends to give stimulants, such as hot spirits and water, warm beer, &c., under such circumstances, but such drinks are *dangerous*, and are to be unhesitatingly condemned.

Organs of Digestion.—You all know the difference between a clean tongue and a furred tongue ; you call the latter a *bad* tongue, and rightly so, as the tongue becomes furred when the stomach, bowels, or liver are out of order, and also in feverish attacks ; sometimes even from some local cause, such as smoking. A tongue furred in consequence of biliousness or derangement of the stomach or bowels is accompanied usually by foul breath and a nasty and sometimes a bitter taste in the mouth. In fevers and inflammatory diseases the tongue becomes very dry as well as furred, and brownish, sometimes almost black in hue; in bad cases it gets so dry and hard that the patient cannot put it out. As improvement sets in the fur peels off in pieces, the tongue cleaning first at the tip and edges, and appearing red, raw, and sore. Aged persons are liable to suffer from dryness of the tongue apart from feverish attacks.

The tongue may be pushed out, not straight, but to one side, as in cases of *Paralysis* and *Apoplexy*, or "stroke," or when protruded you may see that it is tremulous and shaky, as in *Delirium Tremens* (from drink), extreme exhaustion, or great nervousness.

It varies in colour too, sometimes being glazed and very red, as in *Diabetes;* on other occasions pale, flabby, and indented at the sides by pressing against the teeth, as in some feeble states of the body. In infants the complaint known as *Thrush*, white curdy patches on the tongue, is frequent; the same disorder occurring in aged persons after long illness is a bad sign.

In feverish attacks dirty brown or blackish sticky masses form often on the teeth and lips, consisting of dried secretion and blood from the gums; these go by the name of *sordes.*

As regards *appetite*, the nurse is really the only person who has the chance of speaking accurately, and so it is highly important that she should note down the articles of food taken by the patient, the amount taken, and the times at which it is given. It is no use the nurse saying, "he has not taken much to-day," or "he has made a poor dinner," and so on; such remarks are merely expressions of her opinion, and may be far away from the truth; she must note the *actual quantities* of the food taken (half a pint of soup, two ounces of milk, and so forth), and the times at which the nourishment is swallowed. And *then* the doctor, on hearing the report, may form a tolerably correct idea of how his patient is faring.

Again, it is important to know if the food is taken with zest and enjoyment, or, on the contrary, without any relish, or swallowed doggedly as a duty that must be got through. The nurse must carefully note, too, if food is followed by pain, vomiting, flatulence, heartburn, or rising in the throat of liquids, and if so, how long after meals such symptoms occur.

You find loss of appetite in feverish states of the body, whether special Fevers or inflammatory attacks, in diseases of the stomach, and feeble conditions of the body; and the same effect results from mental depression and worry. More rarely the appetite is excessive and voracious, as in several cases of *Diabetes.* In other instances, again, the appetite is perverted, the patient eating to great excess some special article of food, or some substance not suitable for food; thus, I have met with people who were in the habit of swallowing large quantities of starch at every opportunity, and one individual who had a weakness for eating coal.

Thirst is another symptom which must be noted. It is a sensation felt chiefly in the back of the mouth and throat, but can only be effectually relieved by swallowing liquid, so that the latter can be absorbed into the blood. Thirst is complained of in all feverish states, in stomach derangements, and in cases where the body is drained of fluid, as, for example, in excessive vomiting or diarrhœa, great perspiration, sharp bleeding, and the passing of large quantities of urine, as is met with in *Diabetes.*

To relieve thirst, acid drinks, as lemonade made from the fresh fruit, are useful; these act by causing an increased flow of saliva and so lessen the dryness of the throat; the liquid, too, on reaching the stomach is absorbed into the blood. Tepid drinks are recommended too, especially for the thirst of *Diabetic* patients. The sucking of ice is extremely pleasant to a thirsty patient, cooling as it does the parched mouth and throat.

Vomiting or "throwing up" must always be noted, with the time and frequency of its occurrence. The connection of this symptom with anything which has been swallowed should be inquired into; that is to say, whether the vomiting comes on after food or medicine, and if so how long after; or if, on the other hand, it occurs quite independently of meals or physic. It should be noted if the vomiting is easy and painless, or, on the contrary, painful with much straining and retching, also whether the vomiting is or is not followed by relief.

As a general rule, you should keep the vomited matters in a covered vessel in an adjoining room for the medical man to look at; but you ought to have some knowledge of the appearance of different kinds of vomit, in case the discharges are thrown away accidentally or because they cannot well be kept. The vomit may have a marked smell, sour, spiritous, the odour of laudanum or other poison, or the foul smell of the contents of the bowels. It may be green or greenish yellow, as when consisting mainly of bile; or slimy, ropy, and frothy from excessive secretion from the stomach; or consist chiefly of bright red blood poured from a ruptured blood-vessel, or of dark clotted blood or blackish "coffee ground"-looking matter—in reality blood acted upon by the acid secretion of the stomach. Undigested food, curded milk, worms, especially "round worms," and in certain dangerous cases the offensive contents of the bowels, may be thrown up.

Vomiting may be caused by irritating and indigestible food, diseases of the stomach, poisons, obstruction of the bowels, and irritating secretions, such as bile. The vomiting which occurs in the course of Fevers and inflammatory attacks is often due to irritating secretions, especially bile. Vomiting due to affections of the stomach, or to the contents of the latter, whether food or otherwise, being indigestible and irritating, is usually accompanied by a foul and furred tongue, a nasty taste in the mouth, pain or a feeling of a weight or lump at the pit of the stomach, and is followed by relief. Such vomiting is called *stomach* (or *gastric*) *vomiting*, to distinguish it from *brain* (or *cerebral*) *vomiting*, which is not usually accompanied by stomach symptoms, and is not generally followed by relief. I only allude to this that you may see how important it is that you should note if the act of vomiting is followed by relief or otherwise, or if the act is accompanied by pain, or connected with food or the reverse.

To relieve vomiting, the patient should be laid down, fresh air should be freely admitted, and little pieces of ice given him to suck. Soda-water (iced if possible) is useful in small quantities; and soda-water, or lime-water and milk, may be sometimes taken in limited amount when nothing else will keep down. Mustard poultices, or a "mustard leaf," applied to the pit of the stomach frequently affords relief. If the feet are cold they should be warmed by means of heated bricks or hot water-bottles.

The bowels.—Like the vomit, it is necessary that the discharges from the bowels should be kept, in many cases, for the inspection of the medical attendant; but if so, all such matters ought to be placed in covered vessels, and removed into an adjoining room, or into the closet. But you should always be ready to report correctly as to the state and frequency of the evacuations, as well as on their character, and whether accompanied by pain or otherwise. In constipation, the stools are too firm and hard; and in connection with this, always be careful to note the presence of hard rounded ball-like lumps or masses in the motions, as such *scybalæ* (as they are termed) frequently give rise to pain, *Colic*, and other distressing symptoms. Care is the more needed in this matter, since these troublesome *scybalæ* may exist in quantities when the patient has been suffering apparently from diarrhœa. In diarrhœa of a simple kind the stools are relaxed or liquid, but of ordinary colour; in other cases, as in *Dysentery*, the motions are mainly composed of blood and slime, and accompanied by very painful straining; while in some instances, as in *Typhoid*, the evacuations are liquid, flocculent, very offensive, and of a yellow-ochre, pea-soup appearance; or they may be liquid and watery, similar to "rice-water," as in *Cholera*. Moreover, the evacuations may contain bits of undigested food, firm pieces of milk-curd, or different worms, as round worms, thread-worms, or portions of tape-worms.

As regards colour, the motions may be of the natural brown hue, or very light, even white and clayey, from absence of bile; very dark or green, from excess of bile; black, either from discoloration caused by the taking of medicine containing iron or bismuth, or from the presence of blood. Streaks of bright red blood in small quantity may be met with as the result of *Piles*.

You should pay attention to all these things, as you may thereby be enabled to assist the doctor with useful information; and let me warn you, if nursing a case of *Typhoid* or *Inflammation of the bowels*, not to give any strong purgative, nor indeed any aperient at all, without the doctor's sanction. Indiscretion of this sort has before now cost the patient his life.

There are various changes in the quantity and character of the *urine* during disease which must be noted. It is often necessary, particularly in certain cases, to put aside a portion of the urine to be looked at and examined by the medical attendant. It is customary, in public institutions, to keep the urine in conical-shaped glasses, rounded, but not quite pointed, at the bottom, and to place these, covered with pieces of paper or card to exclude dust, in an adjoining room. In ordinary practice it is convenient often to provide specimens of the urine by pouring it into clean bottles (a clean half-pint medicine bottle does very well), stoppered with clean corks, for the doctor to examine and test at his own residence.

Roughly speaking, in health about forty to fifty ounces of urine are passed in the twenty-four hours; but this varies much, especially in connection with the amount of liquid swallowed. But in disease the urine may be very scanty, or, on the other hand, passed in enormous quantities, as in *Diabetes*. And you may likely enough be asked to measure the urine passed by a patient in twenty-four hours. You can readily do this by means of a *graduated measure;* or, if this is not available, by an eight ounce medicine bottle, or a jug or other vessel of known dimensions. At the hour from which you begin to measure, the patient should empty his bladder, and the urine be thrown away; then all the urine subsequently passed, and also that passed exactly at the same hour on the following day, should be carefully measured, and thus you will have accurately the amount passed in the twenty-four hours.

Any unusual odour, colour, or thickness of the urine should not be overlooked. In some complaints the urine is very offensive, and after certain medicines and some foods smells peculiarly. And instead of being clear and yellowish in tint, it may be smoky-looking from the presence of blood, or milky from matter or *pus*. If urine is turbid or thick *when passed*, the facts should always be noted.

The *reaction* of the urine should also be tested; that is, whether it is acid, as it is in health, or the reverse (alkaline). This is decided by means of *test-papers*; blue litmus paper turning red on immersion if the urine is acid, red litmus paper turning blue, and turmeric paper becoming brown, on immersion if the urine is alkaline. You may have to take care of these *test-papers* for use by the doctor as he needs them; and you may have charge as well of a little instrument called a *urinometer*, by which the *specific gravity* of the urine is got, or in other words, the weight of a given quantity of the urine as compared with the weight of an equal quantity of water.

The urinometer consists of a small glass bulb, weighted below, with an erect, slender, graduated stem above (Fig. 27); similar instruments are made of metal, and these have the advantage of not being so easily broken. Others, again, are provided with a "foot," so that they can be placed to stand upright (Fig. 28). Placed in pure water, the urinometer sinks to the figure 0 or 1000, close to the top of the stem; but put it into healthy urine, and usually it sinks only to a point between 1015 and 1025, as urine is denser and heavier than water. Should the urine contain sugar, as in *Diabetes*, the specific gravity is still higher, 1040, 1050, or even 1060. In other cases again, the specific gravity is very low, nearly the same as that of water, so you can understand that the urinometer is a very important little instrument, and it may prove very handy for you to learn how to use it.

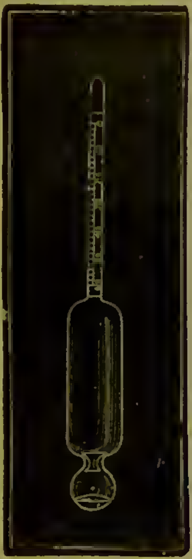
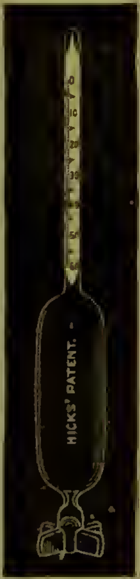


Fig. 27.—Urinometer.


HICKS' PATENT.
Fig. 28.—Patent Urinometer with "foot."

There are certain chemical tests applied to urine by medical men, which it is not necessary to describe here, for the purpose of detecting the presence of *albumen* (which is found in *Bright's Disease*, for example) and *sugar* (which occurs in *Diabetes*). You may perhaps have the charge of a spirit-lamp, test-tubes, certain liquids in bottles (as nitric acid, Fehling's solution, &c.), for carrying out these tests; so when you have an opportunity, accustom yourselves to the appearance and names of these articles, so that if the doctor asks you to bring them out you may not appear ignorant.

Apart from the nature of the urine itself, symptoms of the greatest importance sometimes occur in connection with the act of passing it. Thus, any difficulty in making water, or any pain, scalding, or straining associated with the act, should be noted. If a patient tries to make water and cannot do so, he will soon complain; but it is otherwise in cases of helpless insensibility, when the bladder becomes full of urine, and yet the sufferer neither feels pain nor attempts to make water. Similarly, in certain cases of *Paralysis*, the patient loses sensibility to pain, and all power of emptying the bladder. In such instances no water is passed, though the bladder may be enormously and dangerously distended with it.

You may have to nurse also cases of serious kidney disease, where the kidneys fail to act, no urine being formed, the bladder empty, and of course therefore no water passed. From what I have said you will now easily see the extreme importance of a nurse reporting promptly to the medical attendant if she notices that her patient does not pass water at the ordinary times. Neglect to report early such an ominous symptom may mean death to the patient.

ORGANS OF BREATHING OR RESPIRATION.—*Coughing*, at all events if severe, will attract attention soon. When a person coughs, he first takes in a deep breath, the entrance to the windpipe then closes, and, lastly, there is a violent breathing out (or expiration), the outward blast or current of air forcing open the windpipe entrance, and clearing away any obstructive phlegm or substances, such as crumbs, dust, &c., that may have "gone the wrong way."

A cough, then, is usually caused by something, such as phlegm, being in the air-passages, and the cough is the natural process or act by which the phlegm is expelled; but cough is produced also by irritation of the air-passages without there being anything in them, as, for instance, in inflammation and other varieties of disease.

So it is important for you to note the *character* of the cough; whether it is *dry*, hacking, hard, tickling, troublesome, without expectoration, or, on the other hand, *loose* and *moist*, accompanied by the spitting of phlegm. The cough has a peculiar and characteristic sound in some diseases. Thus, in *Whooping-cough* it comes in bouts or paroxysms, each of these being made up of a rapid series of breathings out (or expirations), followed at last—when the child appears livid and almost suffocated—by a single long inspiration sounding like a "crow" or "whoop." In *Croup*, again, the cough is short, high pitched, of a curious metallic and ringing character.

Apart from the character of the cough, you should note its severity, frequency of occurrence, times of greatest frequency (night or day, for instance), whether it comes on in paroxysms or otherwise, whether accompanied by pain or distress, or if associated with vomiting, change of air, of temperature, or of position.

In health there is just enough fluid or secretion produced by the air tubes to keep their lining moist; but in disease all this is altered, either the secretion being *lessened*, causing dryness and soreness, or *increased*, when it is coughed up and got rid of as *phlegm*, *expectoration*, or *sputum*.

You should be careful to see that this expectoration is received into a proper vessel (or *spittoon*[1]), kept for the purpose close to the head of the bed, for the medical man to see at his visit. It varies much in character, being watery, frothy, white, as in the earlier stages of *Bronchitis;* or greenish, *not* frothy, heavy, sinking if placed in water, consisting of matter or *pus* (hence called *purulent*), as in the later stages of *Bronchitis;* or viscid, sticky, rust-coloured, so tenacious that it sticks to the spittoon, even when inverted, as in *Inflammation of lungs;* or frothy, bright red, bloody, as in rupture of a blood vessel of the lung; or it may be horribly offensive and putrid-smelling, as in *Mortification of the lung*.

Apart from the character of the phlegm, which you see is very variable, the quantity and the difficulty or ease with which it is got rid of should be noted.

The *frequency and character of the breathing* is another important matter. A healthy person breathes from fifteen to eighteen times in a minute, and the breathing is quite calm, regular, and noiseless. Children breathe much more quickly, at birth the breathing being as high as forty, but dropping to about twenty-six when the age of five years is reached. The rate of breathing can be readily counted by watching the movements of the chest, or by laying a hand lightly on the lower part of the chest, so as to feel the movement, for the space of one minute, as timed by the second hand of your watch. In disease the breathing may be affected in different ways: much too rapid, as in *Inflammation of lungs;* too slow, as in long-standing *Bronchitis;* labouring, whistling, gasping, panting, as in *Asthma;* wheezing or rattling, as in *Bronchitis;* hoarse, metallic, ringing, as in *Croup;* shallow, though quick (patient being unable to breathe deeply), as in *Pleurisy* and many other diseases; accompanied by severe pain, as in *Pleurisy*, or loud and snoring, as in *Apoplexy* and deep insensibility from drink.

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[1] "The best extemporary spittoons are made out of jam-pots, into which newspaper has been folded all round. When they require emptying, the newspaper is gathered together at the top, dropped down the w.c., and a fresh paper folded into the jar in its place."—*Guide to District Nurses:* Mrs Dacre Craven.

ORGANS OF CIRCULATION.—You may be asked by the doctor to note down at certain times or intervals the frequency of the *pulse.* You know that the pulsation (or *pulse*) of the arteries is due to the successive waves of blood driven along them by the action of the heart, and that such beating or pulsation may be readily felt (as well as often seen) in those arteries which lie close to the surface of the body. In examining the pulse, however, the most conveniently-placed artery is that called the *radial*, which may be easily felt at the front of the wrist near the outer (or thumb) side. Place the ends of two or three fingers on the artery, pressing gently so as to feel the pulsation clearly, and by means of the second-hand of your watch count the number of beats (that is, the frequency of the pulse) in a minute. In a healthy grown-up person the rate of the pulse is from 70 to 80 per minute, but in children it is much quicker, being from 130 to 140 in newly-born infants, from 115 to 130 in the first year, from 100 to 115 in the second year, and from 80 to 90 in children between seven and fourteen.

Exertion, excitement, and nervousness all increase the rate of the pulse, so you should be careful to count it when the patient is calm, quiet, and in a state of rest. The rate of the pulse may, with a little care, be easily counted by the nurse; and to some extent also its character, whether strong or weak, regular or irregular, hard or soft, or wiry or jerking—but such knowledge can only be picked up by practical instruction. The pulse increases in frequency in Fevers and inflammatory attacks, and is also very rapid and weak in great exhaustion.

Palpitation, or excessive beating of the heart, is often of a distressing character. The patient is likely to complain of it to the nurse, and the hard thumping of the heart can be felt on application of the hand to the left side of the chest, and in severe attacks may be seen as well. It may arise from a great variety of causes, as disease of the heart itself, Gout, Fever, a poor state of the blood, nervousness, certain articles of food, &c. The time, duration, and frequency of the attacks should be noted, and any apparent connection with a particular kind of food, or with alcohol, tea, or tobacco.

Fainting (or *Syncope*) arises, as you know, from failure or feebleness of the action of the heart. You were instructed in this matter during your First-Aid course; and when acting as nurse you ought to note its occurrence and the whole circumstances of the attack, and apply the usual temporary remedies.

THE NERVOUS SYSTEM.—I have already alluded to shivering fits or *rigors*, and to *loss of sleep*, which are results of some derangement of the nervous system; and have now to point out other symptoms due to a similar cause.

Delirium, or derangement or wandering of the mind, should be noted, with its character, time of onset, the period of the twenty-four hours at which it is most marked, and anything that seems to aggravate it. It is, in the majority of cases, worse at night, but varies much in character. Thus, in *Delirium Tremens* of the drunkard it is marked by suspicion, fright, tremulousness, and the sufferer fancies he sees or hears all kinds of horrible things; in other cases, the patient is excited, furious, violent, struggles to escape from bed and all control, and may be dangerous to others. This is the *maniacal*, wild, or raving kind of delirium; the opposite extreme —quiet, low, muttering—is called the *typhoid* variety, and, when accompanied by picking of the bedclothes or throwing up the hands to seize fancied objects in the air, is of very evil omen. Between these extremes there are all shades of delirium, some being but slightly "muddled" or confused, others very talkative and fussy, or anxious and depressed.

A delirious patient should never be left by himself. Be careful not to irritate him by thwarting, contradicting, or losing temper with him. Kindness, with tact and firmness, are the proper methods of dealing with such patients. If he is very violent, pass a sheet folded lengthwise across the patient (over the blankets) and secure it with strong pins under the bed, or else tuck it securely under both sides of the mattress. The sheet should be folded of sufficient breadth to reach from the armpits to about the hips, but must not be drawn so tight as to interfere with the patient's breathing.

The application of cloths dipped in cold water, or of bladders of ice, to the head sometimes relieves delirium, or a mild stimulant, as coffee, to drink.

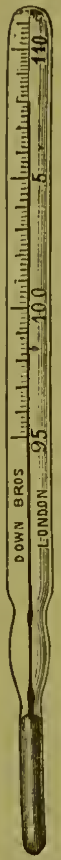

Fig. 29.—Clinical Thermometer.

Other symptoms to be noted are *excessive sleepiness*, *stupor*, *insensibility*, *paralysis*, as when there is no power to move an arm or a leg, or the features are drawn to one side, &c., *loss of sensation* in any part of the body, *convulsions* or fits, or disorders of the special senses, as loss of sight, hearing, or taste, noises in ears, specks before the eyes, and so forth.

TEMPERATURE OF THE BODY.—One of your most frequent duties will be to ascertain the *heat of your patient*, or in other words, to *take the temperature* of his body. For this purpose you need a little instrument called a *clinical thermometer* (Fig. 29). This is simply a small thermometer about 4 or 6 inches in length, graduated or marked to show temperatures from 90° F. or 95° F. to 110° F., and provided with an *index*, which marks the highest temperature to which the thermometer is exposed every time it is used. The scale of the thermometer, you will see, is marked with figures at intervals of every five degrees, thus 95—100—105—110, each of these intervals being divided (by four *large* lines) into five spaces—each of which equals one degree. Thus, if the upper end of the index stands at the third line above 95° F., it marks 98° F., and if at the fourth line above 100° F., it marks 104° F. But on looking carefully you will see that each of these spaces of one degree is also divided (by four *small* lines) into five parts—each of which equals a fifth part of a degree, or, what is the same thing, two tenths of a degree. So that if the index is at the second *small* line above 100° F., that reads 100° F. and two fifths of a degree, or as it is usually put, 100·4° F. (100° F. and four tenths).

You will see on the scale of the thermometer a little arrowhead opposite the second *small* line above the large line marking 98° F.; the arrow-head therefore marks 98·4° F., and it is put to mark 98·4° F. because that is the average temperature of the body during health.

To use the instrument, you first swing it sharply, or jerk it briskly, so as to shake the index two or three degrees below

98·4° F., and then place the bulb end well into the patient's *armpit,* being careful that the skin is wiped dry of perspiration, and also that the instrument is placed well into the hollow of the armpit without being touched by any wool, flannel, or clothing. The arm of the patient must then be drawn close to the side with the forearm across the chest, and the bedclothes adjusted to their proper height. The heat of the body causes the mercury in the bulb to expand and push up the index, so that the upper end of the index marks the degree of heat on the thermometer scale. The instrument, *having been left in the armpit for at least five minutes,* is withdrawn ; the mercury at once shrinks, but the index remains in the position to which it has been pushed, its upper end, as I have already shown, marking the temperature of the body. Before the instrument can be used again the index must be shaken down two or three degrees below 98·4° F. Such an instrument is described as *self-registering.* Occasionally it is found more convenient to take the temperature by placing the bulb of the thermometer in the patient's *mouth,* underneath the tongue, care being taken that the lips are closed on the instrument, but not the teeth. This plan is useful, for instance, when the patient is sitting up.

In some cases again, especially in children, in extremely thin people, and in insensible patients, it is best to take the temperature by oiling the instrument, warming it, and carefully passing it for one or two inches (according to age of patient) into the lower end of the bowel (or *rectum*). In whichever way it is used, however, the instrument should be left in position for *at least five minutes.*

As I have said, the average temperature in health may be roughly put at 98·4° F., and it is so marked on the clinical thermometer by a little arrow-head ; it fluctuates, however, to the extent of a degree or a degree and a half, being usually higher in the afternoon and evening than in the morning. *A rise of temperature, however, above* 99·5° *F.* (ninety-nine degrees and a half), if continued for any time, is *a certain sign of fever ;* and by *fever* I mean the condition of the body in which there is *undue heat,* quickened pulse and breathing, thirst, loss of appetite, scanty urine, with it may be headache, exhaustion, sleeplessness, shivering, and general aching.

This state of *fever* may be the chief feature of a case, the main complaint from which the patient suffers, and is then spoken of as *primary fever*. Such a case is one of Fever; as, for example, *Typhoid*, *Typhus*, *Smallpox*, *Rheumatic Fever*, *Ague*, &c.

In other instances the state of *fever* is merely the result of, or secondary to, some local mischief, and is then called *secondary* (or *symptomatic*) *fever;* as, for example, the feverish state which accompanies *Inflammation of the Lungs*, or an *Abscess*.

But whether the *fever* is the main part of the disease—in fact, a Fever of some kind—or only a secondary symptom of an inflammation of some part of the body, you can, with a clinical thermometer, easily find out its degree of severity and ascertain its course. *Fever* under 101° F. is thought *slight;* between 101° F. and 103° F., *moderate;* from 103° F. to 105° F., *high;* and over 106° F., *excessively high*.

In disease, as in health, the temperature varies (but to a much greater extent) in the twenty-four hours, being usually higher in the evening than the morning. Indeed, not unfrequently the temperature, though natural in the morning, rises to *fever* height in the evening, so that if the thermometer is not used in the evening the attendants may be in ignorance of the *fever* existing. It often happens, therefore, that the nurse is asked to take the temperature both morning and evening, say about 8 or 9 a.m. and 8 or 9 p.m.; and in order to note the daily fluctuations accurately the thermometer should be used at the same time every day. In other cases, again, you may be required to take the temperature frequently, so as to watch accurately the course of the *fever*. The careful use of the thermometer is extremely important in several ways. As I have said, it will always tell if *fever* exists, from whatever cause; but it does much more. The temperature rises and fluctuates during some diseases in such a characteristic and peculiar manner, especially at the beginning of the attack, that the thermometer often enables the doctor to find out or diagnose the malady before its especial symptoms show themselves; and even if he cannot say what the threatening attack actually is, he can in many cases state positively what it *is not*.

An unexpected rise of temperature during the course of (or recovery from) a disease points to either a relapse of the complaint, or to the onset of some local inflammation complicating the original disorder.

The heat of the body is *lower* than natural in some cases, as collapse (or a "sinking" condition) from disease, bleeding, &c. Again, the thermometer often gives information as to the severity, danger, and probable result of an attack. A *high* temperature—about 105° F.—gives warning of a severe and dangerous attack; a *very high* temperature, 106° F. and more, is a sign of *extreme* danger, particularly if it still tends to rise. Increase of temperature from day to day is unfavourable, showing increased severity of the attack; a decrease, on the other hand, showing diminution of the disease.

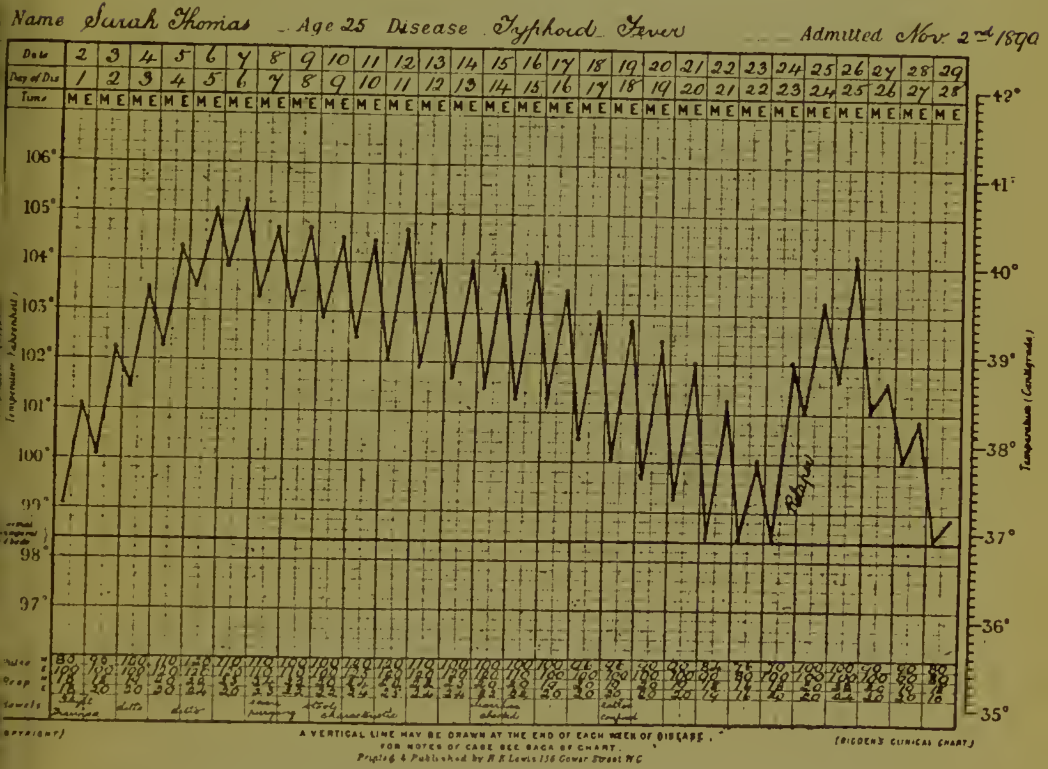

Fig. 30.—Rigden's Clinical Chart, with the temperature, pulse, respiration, and state of bowels of an imaginary case recorded upon it.

A temperature lower than natural, however, with all the symptoms of the disease still marked, means danger from "sinking" or collapse.

Then, as regards the management of the patient, something can be learnt by the thermometer: thus, if it shows *fever*, the patient will need refreshing and cooling drinks, as lemonade, &c., and it may be the application of cold to reduce his excessive heat. On the contrary, if the temperature is below that of health, then warm clothing and hot water bottles are required externally, and warm nutritious sustenance internally.

For the purpose of noting down the temperature of patients, very convenient *temperature charts* are now used: if you place a dot, each morning and evening, on the chart, showing the degree registered by your thermometer, and then connect the dots by straight lines, a most useful record of the temperature, its course and fluctuations, may be kept. Of such charts, that arranged by my friend Mr. Walter Rigden is an excellent example (Fig. 30), as on it the course of the temperature and also the frequency of the pulse and respiration may be easily recorded from day to day. Each chart is arranged to last four weeks, and is ruled at the back —for notes of cases.

Lastly, bear in mind that the best of us are often deceived by our sense of touch as to whether a patient is too hot or otherwise, or as to the degree of his temperature, but *the clinical thermometer, properly used, never lies.*

LECTURE VII

DETAILS OF NURSING

Bedsores and their prevention—Air and water beds and cushions—Cold baths—Sponge bath—Shower bath—Cold douche and affusion—Cold wet pack—Cold wet compresses—Local baths—Cold and evaporating lotions—Drip pot—Irrigation or cold drop—Ice and ice-bags—Cold coil—Lieter's tubes—Tepid, warm, and hot baths—Bath thermometer—Medicated baths—Local hot baths—Tepid or hot sponging—Hot wet pack or blanket bath—Vapour or steam bath—Hot air bath—Turkish bath—Poultices and fomentations—Applications of dry heat—Counter-irritants—Blisters—Mustard leaves.

THERE are endless practical details of nursing with which you must familiarise yourselves by careful practice; such, for example, as the means of preventing bedsores, the application of poultices, fomentations, blisters, and leeches, the preparation of baths, the giving of medicines, the use of hot water bottles, the different ways of bandaging, and other similar duties. A thorough practical knowledge of such work, and a deft, easy, and handy manner of executing it, will enable you to render great service to your patients without needlessly worrying, irritating, or exciting them. The difference between nurses, trained and untrained, in this respect is something extraordinary. Some can never get a bath ready without making a slop, or apply poultices, fomentations, or give medicines without causing some upset or mess; whereas others again manage all such practical details with apparently the greatest ease, and yet with a gentleness and confidence which calms the patient, allays his fears, and inspires him with hope and trust.

BEDSORES.—A good nurse never forgets to strive her best to prevent the formation of bedsores. A healthy person never rests continuously in one position for any length of time, but it is quite otherwise with one suffering from *Paralysis*, extreme exhaustion, or other state of helplessness. Under such circumstances the patient lies in the same posture for long periods, so that the prominent parts of the body on which he rests, such as the lower end of the spine, the heels, the elbows, shoulders, or the points of the hips, are constantly pressed against the under bedclothes. Such continual pressure prevents the free passage of the blood along the minute blood-vessels of the parts, so that the latter are deprived of their proper nourishment, and consequently die, mortify, or *slough*—in other words, *Bedsores* are formed. As you may imagine, this more readily occurs when the heart acts weakly and the circulation of the blood is altogether feeble; and also when the blood itself is poor, and not so rich in nourishment for the different tissues of the body as it should be. These different causes usually act together, for in a prolonged and serious illness the action of the heart becomes weak, the blood poor, and from such feebleness of the circulation there is a tendency to stagnation of the blood in the most dependent parts; and this stagnation being increased, as described, by the pressure against the bed, mortification of the skin and tissues beneath is the natural result, reaching sometimes even down to the bone.

The nurse should do her utmost to prevent the formation of *Bedsores;* for, as regards this matter, there never was a truer saying than "prevention is better than cure." In the majority of cases a good nurse will succeed in her efforts at "prevention;" but let the *Bedsores* once form, and "cure" is wellnigh hopeless till the patient's general health improves and pressure can be completely removed from the affected parts.

Prevention of Bedsores.—In making the bed be careful that the under bedclothes are properly arranged, tightly drawn, and clean, so that there shall be *no undue pressure* from rucking, creasing, rumpling of the bedclothes, or from crumbs, dirt, &c. Move the patient very gently from time to time, so as to change his position, in order that the same parts of the body may not be constantly pressed upon. *Cleanliness* and *dryness* are very necessary; the skin should be cleaned night and morning with soap and water, and carefully dried, for dampness with pressure quickly causes a sore. For the same reason you must exercise the greatest vigilance in keeping the sheeting and other bedclothes perfectly dry and free from any soiling by the discharges. This, I need scarcely say, is often a most difficult matter. After cleaning and drying the parts it is a good plan to apply violet powder or oxide of zinc. Bathing with spirits of wine, eau de Cologne, or solution of alum, serves to *harden the skin*. Dr. Billroth says it is an excellent plan to "cut a juicy lemon in two, and rub the cut surface over the red places." In those cases where it is almost hopeless to keep the patient quite dry, zinc ointment rubbed on the skin—from its greasy and slightly astringent nature—protects the parts to some extent from the effects of the moisture. With the idea of *protecting the skin*, white of egg, or sometimes collodion, is painted over it, a thin protective coating being thereby formed. A piece of adhesive plaster may be found useful in the same way.

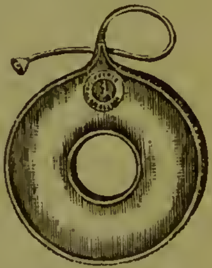

Fig. 31.—Circular Water Cushion, with open centre.

Perhaps one of the simplest and most effective plans is that advised by Dr. Ringer: "The part exposed to pressure should be washed morning and evening with tepid water, and carefully dabbed quite dry with a soft towel, and then gently rubbed over with a little glycerine or glycerine cream. If the skin is sore or tender the glycerine cream is best. A draw-sheet made of linen, and sufficiently large to be firmly tucked in at both sides of the bed (as any folds or creases are very apt to produce tenderness, and eventually sores), will prevent soiling of the bedclothes. This preventive treatment should be commenced before the oncoming of redness or tenderness."[1] If the skin is *reddened*, a good application to prevent a sore is made by mixing equal parts of solution of subacetate of lead and tincture of catechu—to be painted over the affected part. But by far the most important thing is to *remove all pressure* from the tender spot. This may be done by applying spongiopiline or amadou cut in a circular shape, or like a horseshoe, and placed so that the hole in the circle or hollow of the "shoe" is opposite the affected part. The best plan, however, is to use some form of water or air cushion. These may be procured in many different sizes and shapes, some being

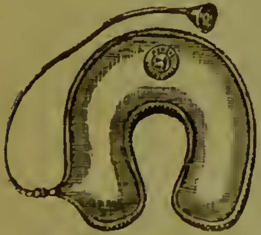

Fig. 32.—Horseshoe-shaped Water Cushion.

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[1] *Handbook of Therapeutics:* Dr. Ringer.

like a horseshoe (Fig. 32), or circular with an open centre (Fig. 31), so that *all* pressure is taken by them off the affected part; others being large oblong or square bags, or consisting of entire mattresses (Figs. 15, 33), by which pressure on the body is equalized, and rendered uniform and smooth. Dr. Billroth, "as the result of long experience," recommends that "only large water-pillows, which are almost bed-wide square," should be chosen; that the pillow, placed flat on the middle of the bed, should be filled with warm water (about 95° F.) till the tension is "such that, by laying thereon both hands and arms, and pressing them down, effort is necessary to press the cushion together." An underlay is then placed "over the pillow, with pillows between it and the head of the bed, and at the foot end (under the knees)." The patient is then laid "carefully upon the water-pillow, so that about a hand-breadth of the lower end extends beyond the pelvis; then the sides and upper end of the cushion will swell, and the hollow of the loins is filled in. Subsequent addition of warm water is unnecessary, as the heat of the body keeps the temperature of the water in the pillow sufficiently warm. If the tension of the cushion is too slack, so that the patient presses it together in the middle, water must be added; if too tight, so that he lies hard, then, without lifting him, some water must be carefully let out. An empty water-cushion, covered with a sheet, can be laid under a patient and filled whilst he lies upon it; this presents no difficulty if the supply tube be held high. At each dressing the sheet over the cushion must be changed."[1] For cases in which *Bedsores* may be expected to form, a water-bed (Figs. 15 and 33) should be adopted from the first. In cases of *Paralysis*, as, for example, in injury to the Spine, *Bedsores* are peculiarly liable to form, as the patient is quite helpless, being unable to move the lower part of his body; keeping, therefore, exactly

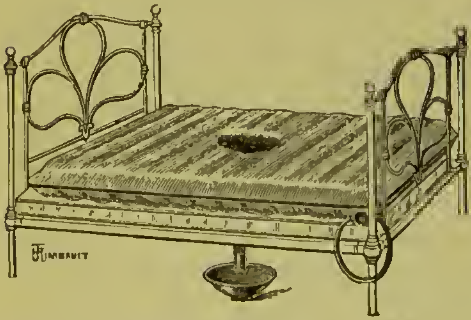

Fig. 33.—Hooper's Elastic Water or Air Mattress, with central tube for conveying away the evacuations.

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[1] *The Care of the Sick*, translated by J. Bentall Endean.

in the same position, all sense of feeling is lost, so sores give him no pain, and the vitality of the paralysed parts is lessened. In cases such as Spinal injury, then, a water-bed should be got at once, always remembering "that where there is any danger of bedsores, a blanket should never be placed *under* the patient. It retains damp and acts like a poultice."[1]

As a general rule, *Bedsores* can be prevented by proper attention on the part of the nurse, being, as Miss Nightingale says, "all but always a symptom not of the disease, but of the nursing." If, however, a sore appears, in spite of every care (and it will happen so in some cases), it is your duty to at once report it to the medical attendant, who will instruct you how to proceed.

BATHS are, as you know, used by people in health for the sake of *cleanliness*. Hot baths are more efficacious for this purpose than cold, though neither are of much service without the free use of soap and vigorous rubbing. There are millions of pores (or *sweat-glands*) in the skin, from which there is constant evaporation of water containing poisonous waste matters from the body; and under some conditions, as great exertion, excessive heat, &c., so much liquid is thrown off by the skin that, not having time to evaporate, it trickles down in beads of *sweat* or *perspiration*. There are yet other pores (*sebaceous* or grease *glands*), placed close to the hairs of the skin, which pour forth a greasy or oily material, and this renders the skin soft and supple, checks undue evaporation, and protects the surface from prolonged exposure to moisture. The skin itself is constantly being renewed from underneath, the surface scaling off in minute particles or scurf.

Want of cleanliness leads to matting together of scurf and greasy material, and consequent blocking or obstruction of the pores of the skin, leading to retention in the body of its poisonous waste matters, and also to local mischiefs, as "pimples" and unhealthiness of the skin itself. It also favours certain *parasitic diseases*, as *Itch* (due to the little itch insect burrowing in the skin) and *Ringworm* (caused by the growth in the hair and on the skin of a minute fungus).

Cold baths are taken by the healthy, and those recovering from illness, for their invigorating, refreshing, or *tonic* effects. On entering the water there is a sensation of *chilliness* and *shock*, the skin pales, the superficial blood-vessels contract, the blood being driven towards the internal organs, and the breathing is hurried or gasping. Very soon, however, there is a *reaction*, the circulation becomes restored, the breathing easy, there is a sensation of warmth and glow, and a sense of renewed vigour, buoyancy, and spirits. This is the beneficial and invigorating effect of the bath; and the bather should leave the water during this reaction stage. For if the bath is prolonged, chilliness and depression again result from the undue exposure to cold, and the bather emerges shivering, blue, miserable, and low. This is to be avoided. The cases of drowning so frequently reported, especially in connection with good swimmers, are due usually to the bather continuing in the water until the vital powers are much depressed from the prolonged exposure to cold; the action of the heart fails, there is loss of consciousness, and the swimmer sinks.

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[1] *Notes on Nursing:* Miss Nightingale.

Cold baths, then, only act beneficially as tonics when a good reaction is obtained and the bather emerges in a refreshing and healthy glow of warmth. This desirable result is favoured by certain precautions. The water should not be too cold, or its depressive influence will be extreme. There is not the slightest occasion to break the ice to get into a bath, as some boast of doing. The water needs only to be sufficiently cold to produce a decided sense of shock on first entering it. Remembering that we put the average temperature of the body at 98·4° F., the cold bath may vary from 70° F. to 50° F.; below that it is very cold. (In a Table of Bath Temperatures, to which I shall presently allude, the *cold* bath is put at 45° F., and the *cool* bath at 66° F.) Then the stay in the bath should be brief, especially in the weakly or convalescing—not longer than three to five minutes without medical advice; and on emerging the body should be quickly dried, and well rubbed with a coarse towel. The time chosen for bathing should not be after a prolonged fast (as depression under such conditions is easily caused), nor too soon after a meal (for digestion is then checked), nor during a period of excitement, as fright (which has a prostrating effect). About midway between breakfast and dinner is a suitable time.

Age must be taken into account. Cold baths are hurtful to young children and old people, the former being very sensitive, and the latter naturally weak.

Such baths should not be taken either by persons fatigued or in an otherwise exhausted or depressed condition.

Sea water is more stimulating to the skin than fresh water on account of the saline matter contained in it, and favours a good reaction. In imitation of this, salt is added often to fresh-water baths, in the proportion of about a pound to four gallons. Another advantage of sea-bathing is that the temperature of the sea fluctuates much less than that of fresh water, and it does not become nearly so cold in winter.

The effect of cold baths, used with due precautions, is to improve the appetite and digestion, promote a hardy and robust state of body, increase mental and physical activity, and conduce to better health. Varieties of the ordinary bath are the *sponge bath, shower bath, douche,* and *affusion :* the first-named resembles the ordinary cold bath in its effect, but the three latter are productive of considerable shock, on account of the water falling more or less forcibly on to the body.

In disease the *cold bath* is found under certain conditions to be of the greatest service ; for example, in lowering dangerously high temperatures in Fevers and inflammatory diseases. The baths should only be administered under medical supervision, so critical are these cases. The most agreeable method, Dr. Ringer points out, is to "immerse a patient in a bath of 95°, and in the course of twenty to thirty minutes gradually cool it to 60° F. by the addition of cold water. This bath is agreeable to Fever patients. . . . Weakly patients should be well rubbed on leaving the bath." In private practice Dr. Ringer adopts the following plan :—"Dip your napkins, or small towels, into iced water, and wring them nearly dry, so that they may not drip and wet the bed ; then apply them one below the other from the chest downwards. As soon as the four cloths are disposed over the chest and abdomen, re-dip and re-wring the uppermost, then the second, third, and fourth, seriatim ; then the first again, and so on continuously. Supplementary napkins to the head, thighs, and arms will of course still more quickly lower the temperature. . . . If the napkins are very frequently changed, the method is most efficacious, and is often highly agreeable to the patient."[1]

Packing with the cold wet sheet, or the *cold wet pack*, is another method of applying cold for lowering excessive heat of the body. On the mattress and pillow (which should be protected by a waterproof sheeting) are placed a thick blanket or two blankets, and over these is laid a sheet wrung as dry as possible out of cold water. The patient is now placed, quite unclothed, on the sheet; one side of the sheet is drawn over the body so as to envelop the patient from the neck to below the feet, and tucked in, the other side being drawn over the reverse way. The patient's feet are lastly raised, and the lower end of the sheet tucked under them. The blankets are arranged over the sheet in a similar manner, and tucked in, and over all are placed four or five more blankets, which should be pressed close to the sides. This process of packing is usually carried out for from thirty to fifty minutes, sometimes for more than an hour, and under some conditions it is applied three or four times daily. You may be required to do this in *Scarlet Fever*, *Smallpox*, or other Fevers, and in inflammatory diseases, as *Pneumonia*. In *Rheumatic Fever*, where the least movement causes great agony, the packing is applied only to the front of the body, and *wet cold compresses* to the painful joints. Similar compresses are often applied around the throat, in *Scarlet Fever* and inflammatory throat affections. These compresses should consist of linen or towelling folded several times, wrung out of cold water, covered with a fold of dry linen, gutta-percha tissue, or oil-silk, and ought to be changed every two or three hours.

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[1] *Handbook of Therapeutics :* Dr. Ringer.

Cold sponging is not unfrequently ordered. If the patient is confined to bed, care must be taken by the use of waterproof sheeting, and perhaps a draw-sheet, to prevent wetting the clothes. All the things, as towels, water, sponge, &c., should be placed ready before you commence, and the process must be carried out bit by bit, each part of the body in turn being stripped, sponged quickly, though thoroughly, rapidly dried, and re-covered. In the case of weakly children, Dr. Ringer advises that if "the child is old enough to stand, he should be placed up to the ankles in warm water before a good fire, and then, except the head and face, be sponged all over with cold water from two to five minutes. He should then be carefully wiped dry, and well rubbed with a soft towel. If weakly, the child may be replaced for a short time in a warm bed to encourage reaction." In the case of weak persons and timid children, "the water, at first tepid, should be gradually reduced in temperature by drawing off the warm water and substituting cold. The shock is thus avoided, whilst the tonic virtue of the bath is obtained."[1]

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[1] *Handbook of Therapeutics*: Dr. Ringer.

Cold affusion (or the pouring of cold water on to the patient) and the *cold douche* (in which the water is forcibly driven on to the body) are both of service under certain conditions, and you may have to assist in their application. Thus severe pain in the head, whether caused by some Fever or by disturbance of the digestive organs, may be relieved, Dr. Ringer says, "very gratefully and effectually" as follows:—"A wash-hand basin should be placed under the ear, and the head allowed to fall over the vessel by bending the neck over the edge; then a stream of cold water should be poured from a ewer gently over the forehead, and so directed that it may be collected in the basin. It should be continued as long as agreeable, and be repeated frequently. The hair, if long, should be allowed to fall into the cold water, and to draw it up by capillary attraction."[1] The douche and affusion are often used to rouse persons who are "dead drunk," or who lie in the stupor of opium-poisoning, and are also applied locally in joint affections.

The *local* application of cold is also managed by the use of *specially shaped baths*, as foot baths for the feet, hip or sitz baths for the lower part of the body, arm baths, and leg baths; by applying *cold* or *evaporating lotions*, *ice*, the *cold coil*, and *Lieter's tubes*.

Cold and evaporating lotions are applied by means of a single layer of linen or lint dipped into the liquid and put on wet; no oil-silk, gutta-percha tissue, or dry covering is used, since the evaporation of the lotion tends to keep the part cool. When the lint gets dry or warm, it should be dipped again in the lotion; or perhaps a better plan is to have two pieces of rag, one in position, the other in the lotion, ready for changing. If the cold dressing is over a wound or sore, it must be kept wet by dripping the lotion on it with another piece of lint (until the dressing requires changing altogether). It may save trouble to use a *drip pot* or vessel containing the lotion slung up above the patient, out of which a piece of lint, flannel, worsted, or lamp-wick is hung, on to the wet rag covering the inflamed or wounded part. You must take care, however, in such an arrangement that the bed is duly protected by waterproof sheeting, and that the superfluous liquid is received into a suitable vessel. Remember, too, that your drip pot will need refilling from time to time. This is a device for saving the trouble of constantly changing or wetting lotion rags; but in some cases *irrigation* or the *cold drop* is ordered, in which a vessel of cold water is hung up in a suitable position, and a tube is so placed that the water drops freely on to the coverings of the affected part.

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[1] *Handbook of Therapeutics:* Dr. Ringer.

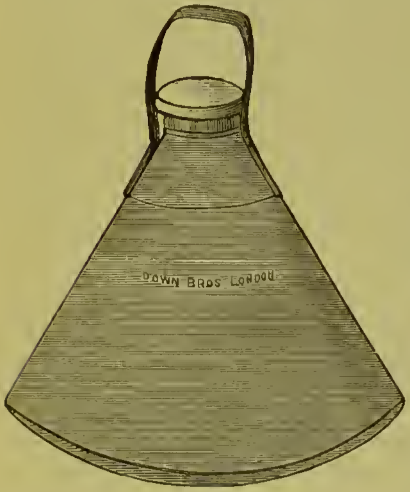

Fig. 34.—Ice or Hot Water Bag, with boxwood cap, and loop for suspension.

In the methods so far described the *cold* is applied *wet;* but when we use ice, the cold coil, or Lieter's tubes, *dry cold* is the result. *Ice* is used in bladders, india-rubber bags (or *ice-bags*) of various sizes and shapes (Figs. 34 and 35), and under some circumstances in glass bottles and tin boxes.[1] Ice may be splintered easily and quietly into suitable fragments by the use of a sharp-pointed instrument, such as a good strong needle or a pointed awl. The ice-bag or bladder should only be half filled, or it cannot well be adapted to the affected part; the weight of the bag must be taken off the patient by proper slinging arrangements, though the bag itself must be properly applied; and there should be a piece of lint, linen, or gauze between the bag and the patient's skin, so as to lessen the intensity of the cold and take up the wet which condenses from the air on the out-

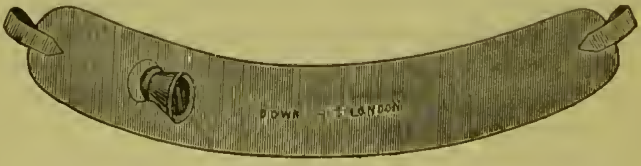

Fig. 35.—Ice or Hot Water Bag, curved for the throat.

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[1] Ice-bags can be improvised "by cutting gutta-percha tissue into the required shape and fastening the edges together with chloroform. . . . Waterproof sponge bags also make good ice-bags."—*Guide to District Nurses:* Mrs Dacre Craven.

side of the ice-bag. Care should be taken that the bladder or bag is fastened securely by tying the mouth on a cork or wooden bung. Glass bottles and tin boxes prove useful on emergency—for instance, in time of war, and amongst poor and populous districts, the disadvantage of such articles being their rigidity and hardness. "Dr. Stokes considers that the best way of applying ice to the head is to place a smooth piece of ice, two or three inches long and one and a half broad, in a cup of soft sponge, and pass it round and round over the head. The sponge absorbs the water, and the pain of the cold is avoided. When the sponge is saturated it is to be squeezed and the ice replaced. The head should be shaved, or the hair cut close."[1]

Dry cold may be applied too by the *cold coil*. "I gave this name," writes Professor Esmarch, "to a long rubber tube which is wound in spiral turns around the inflamed part, and one end of which, provided with a perforated pewter nozzle, is dropped into a vessel full of ice-water, while the other end hangs in an empty vessel. By applying suction to the latter end a stream of ice-water can be set in motion, and this can be regulated by compression exercised on the lower end by a string tied around it. When the upper vessel is empty it can be refilled by pouring the water back again into it from the other. I have also endeavoured to made use of the same method for reducing the temperature of the entire body in the febrile diseases (*Typhus*, *Scarlet Fever*, &c.), by having a long india-rubber tube sewed upon a sheet so that it covered one side of it in close-lying parallel coils. If this *cold sheet* is spread over the naked body and a stream of ice-water allowed to run through the tube, the temperature can be greatly reduced in a short time without the necessity of wetting the patient or of removing him from bed."[2] Cold may be applied to the head in the same way, by the use of a cap on the outside of which the india-rubber tubing is coiled and secured (Fig. 36).

A similar method is the use of *Licter's tubes*, which are metallic, and therefore a great improvement on india-rubber tubing, since they are better conductors of heat, have no smell, do not arrest perspiration, and are much more durable. A piece of lint, linen, or gauze should be placed between

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[1] *Handbook for Hospital Sisters:* Miss Florence Lees.

[2] *The Surgeon's Handbook.*

Lieter's tubes and the skin of the patient to lessen the intensity of the cold.

Ice is often used internally. It is sucked to relieve thirst; to check bleeding from the mouth or tongue, throat, stomach, or lungs; to stop sickness and vomiting; and to relieve all inflammatory affections of the throat. For such purposes the ice is placed in small fragments near the patient; but it should not be put in a cup or saucer, as it will soon be mixed with water as some portions melt, and all will then rapidly disappear. The proper way is to tie a piece of flannel on the top of a cup or other small vessel, so that the flannel is depressed in the middle; the ice is placed in the flannel, and as it gradually melts the water drains through the flannel, leaving the remaining ice dry. In this way the ice lasts much longer. To preserve ice on the premises ready for use it should be kept in as large blocks as possible, wrapped in flannel, and placed in the cellar or in a hole in the ground—in such a way that all fluid may drain off.

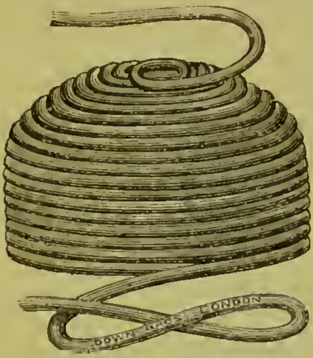

Fig. 36.—Spiral Iced Water Cap, for applying continuous stream of iced water to the head.

APPLICATION OF HEAT.—*General tepid* and *warm baths*, used with soap and rubbing, are commonly taken by the healthy for the sake of cleanliness. In the *treatment of disease tepid*, *warm*, and *hot baths* are frequently employed. This Table of Bath Temperatures, from the South-Eastern Fever Hospital, gives a good idea of the heat of the various baths:

Cold bath . .	45° F.	Tepid bath . .	87° F.
Cool bath . .	66° F.	Warm bath . .	98° F.
Temperate bath .	78° F.	Hot bath . .	105° F.

Ordinary baths to be of temperature of 90°—95° F.

Patients ordered warm baths to be carried or wheeled to bath wrapped in blankets. When bath is over, they are to be wrapped in *warm* blankets, and then placed in bed.

As a general rule, a tepid bath should not last more than from twenty to twenty-five minutes, a warm bath from fifteen to twenty minutes, and a hot bath from ten to fifteen minutes. Neither should a person take, without medical advice, a bath of a higher temperature than 98° F.—the average temperature of the body in health. When you receive instructions to prepare a bath, however, do not be satisfied with such vague terms as tepid, warm, or hot, but ask what the temperature of the bath is to be, and get the required heat of water with the aid of a *bath thermometer* (Fig. 37). Remember, too, that a bath ordered of a certain temperature must be *kept* at that temperature, so that the thermometer must be used every few minutes (well immersed before each reading), and hot water added to the bath as required, care being of course taken that the scalding water is not poured on the patient.

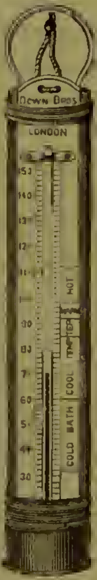

Fig. 37.—Bath Thermometer.

If no thermometer is at hand, or a bath is needed in a great hurry, you should test the heat of the water roughly by plunging the bare arm up to the elbow into it (*not the hand alone*), so as to find if the water is too hot or otherwise. This precaution should *always* be taken in the case of children; and to avoid frightening a child it is best to spread a blanket over the bath, and let down the little one into the water *on* the blanket. Exposure of older patients may be easily avoided by wrapping them in a blanket as their linen is removed, and using the blanket to lower them into the bath and to lift them out of it.

General warm baths, from 90° F. to 95° F., preferably of rain water or soft water, are used for their soothing effect in certain skin diseases; and in some cases size is added (4 lbs. to 30 gallons of water), or bran (4 to 6 lbs.), potato starch (1 lb.), gelatine (4 lbs.), or linseed (1 lb.). Such baths are spoken of as *size baths, gelatine baths, bran baths*, &c. In the same way there are *soda baths, sulphur baths, mercurial baths*, and others; and all these baths to which reagents are added may be included under the general title of *medicated* or *medicinal baths*.

General warm and hot baths (the latter especially) cause fulness and dilatation of the blood-vessels of the skin, thereby relieving the internal organs and leading to perspiration—in the case of hot baths usually to copious sweating. Warm baths exercise a soothing, hot baths a stimulating influence on the nervous system; so you can understand that in the treatment of different febrile and inflammatory diseases, and for the relief of pain, baths of varying temperature may be ordered, and hence the need of careful attention to your instructions and diligent use of the bath thermometer.

The general effect of these baths (however beneficial in other respects) is weakening and enervating; therefore a patient should always be carefully watched in case faintness comes on, when you should promptly remove him. And healthy persons taking hot baths should douche or sponge the body over with cold water before drying themselves.

Local warm or *hot baths* are frequently ordered, as the *hot foot bath*, the *hot hip* or *sitz bath*, the *bed bath* or *bidet* (Fig. 38), and *hot arm* and *leg baths*. Mustard is often added to these baths, and is often of much efficiency, as it is also used with general warm baths. For children "a tablespoonful of mustard should be added to a bath sufficiently large for the child, who should be held in it by the nurse till her arms tingle and smart."[1]

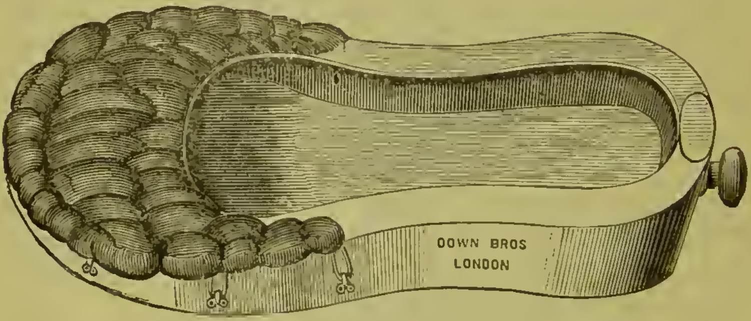

Fig. 38.—Bed Bath or Bidet.

When local baths are used, care must be taken that the exposed parts of the body are protected from cold by blankets.

Sponging with tepid or hot water—generally or locally—is often practised. If general, the body should be sponged bit by bit, so to speak; one portion being sponged, dried, and covered before going on to the next part. The most thorough way of doing it, however, is to remove all clothing from the patient, who should be laid on a blanket, the mattress being protected by waterproof sheeting. The patient should then be sponged with water, to which vinegar has been added, from above downwards. The sides of the blanket are then rolled over the patient, the bedclothes replaced, and after an hour's rest his night-dress is put on, and the bed made comfortable as usual.

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[1] *Handbook of Therapeutics:* Dr. Ringer.

The *hot wet pack* is managed in much the same way as the cold wet pack; but the sheet (or, if directed instead, the blanket) is wrung out of water of a temperature of 110° F., rapidly applied around the patient's body, three or four additional blankets being quickly tucked closely over all. After leaving the patient for an hour or thereabouts, he is wrapped in a warmed and dry blanket, all the wet things being removed, and, lastly, he is quickly dried and made comfortable in bed. This hot pack, or, as it is called, *blanket bath*, is used to increase the action of the skin and cause sweating.

A *vapour* or *steam bath* may be easily given in the way described by Dr. Ringer. "A couple of common red bricks are placed in an oven hot enough for baking bread, and in half an hour, or little more, they are sufficiently heated for the purpose. The patient's body linen having been previously removed, these two bricks are folded in a piece of common thick flannel, thoroughly soaked in vinegar, and laid on two plates; one is to be placed about a foot distant from one shoulder, and the other about equally distant from the opposite leg, and the bedclothes are then to cover the bricks and the patient closely round the neck. A most refreshing acid steam bath is thus obtained, and the supply of steam may be kept up, if necessary, by removing one brick and replacing it by another hot one kept in reserve. When the patient has been in the bath for fifteen or twenty minutes the bedclothes and plates should be removed, and the *patient instantly mopped all over very rapidly with a towel wrung out in cold water*, and then quickly rubbed dry. Dry warm linen must be put on at once, and dry bedclothes must replace those which were on the bed previously. The under-sheet can be removed and a dry one substituted by fastening the corners of the dry sheet to those of the damp one; generally very little difficulty is met with in simply drawing the old sheet from under the patient, when the dry one follows it, and is left in its place."[1] This has been found to afford the greatest relief in the case of patients

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[1] *Handbook of Therapeutics:* Dr. Ringer.

"lying helpless and irremovable in bed" from acute *Rheumatism.*

Another plan is to remove the sheets from the bed, place the patient unclothed on the under blanket, cover him with a body cradle, over which arrange one or two good-sized blankets, which should be tucked in so as to completely cover the patient except his head. The next thing is to arrange a good *Bronchitis* kettle, half full of water, with a long spout, over a suitable lamp or stove near the bed, and place the end of the spout under the body cradle and upper blanket, but above the patient (Fig. 39). In about a quarter or half an hour copious sweating is brought on, and the skin should then be well dried with warm towels.

Hot air baths may be arranged in a similar manner, the only difference being that no kettle is needed, but the bent chimney of the lamp is passed under the upper bedclothes and body cradle (Fig. 39). *Hot air baths* and *Vapour baths* can be managed in even a simpler manner still, as described by Dr. Ringer thus:

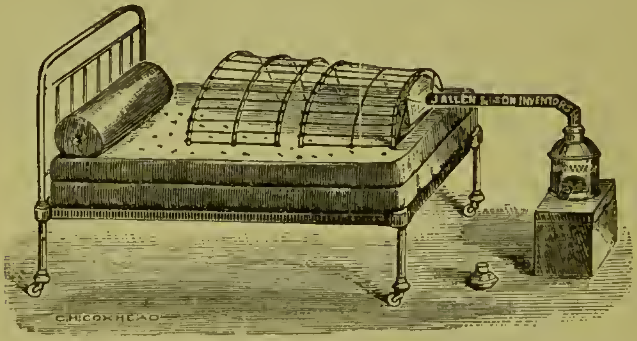

Fig. 39.—Allen's Vapour and Hot Air Bath, for use with body cradle and bed.

"The patient, quite naked, seated on a wicker chair, with his feet on a low stool, is enveloped in two or three blankets, the head alone being exposed, and a spirit lamp with a large wick is placed under the chair. In about a quarter of an hour perspiration streams down the body, and this secretion may be increased by drinking plentifully of water, and by placing a pan of water over the lamp" (Fig. 40). If the pan of water is used, you have a vapour bath; if not, a hot air bath.

If it is wished to give the patient practically a *Turkish* *bath*, when he "has perspired sufficiently the blankets are quickly removed, and one or two pailfuls of cold water are poured over him ; or if this affusion is too heroic, he may step into a general bath at 80°, or, better still, a few degrees lower."[1]

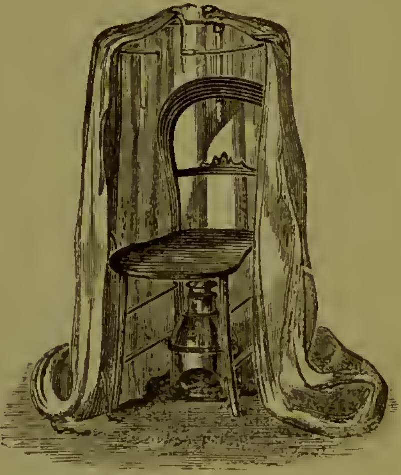

Fig. 40.—Allen's Vapour and Hot Air Bath for use under chair.

It is the ordinary hot air or vapour bath with which you will have to deal as nurses. If a *Turkish bath* is advised, it had better by far be taken in its complete form. In this bath the patient is exposed first to a high temperature, gradually applied ; he enters a room say at 80° F., and passes into other chambers at higher temperatures—varying from 100° F. to 160° F., or even 220° F. This induces most copious sweating, and the body is then shampooed. In this way waste and noxious products are removed from the body by the excessive perspiration. Following this the body is cooled by a spray of water, first hot, then gradually changed to cold. Lastly, the process is completed by a plunge into a cold bath, and rest in an agreeable cool chamber. This kind of bath acts as a powerful *tonic*, but it is not everyone that can stand it—such, for example, as those who suffer from feeble hearts.

In disease it proves especially serviceable to those suffering from *Gouty* and *Rheumatic* diseases, and others in whom the skin fails to carry out its functions properly.

Heat, combined with moisture, is very often locally applied by means of *poultices* and *fomentations*. The great advantage of poultices is that they retain their heat for a considerable time ; on the other hand, fomentations are very readily made, are lighter, and are more cleanly. The two are often used alternately in the same case.

These applications, by their heat and moisture, soften and lessen the tension of inflamed parts, and aid the circulation in the small vessels of such parts, so that they tend to relieve inflammation and to ease pain; and such effects are produced on deep-seated mischief as well as superficial inflammations—on *Bronchitis* or *Inflammation of the lungs*, for example, as well as on inflamed skin.

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[1] *Handbook of Therapeutics :* Dr. Ringer.

When inflammation has gone on to the formation of matter (or *pus*), poultices and fomentations greatly assist the matter in getting to the surface; they help to bring the *Abscess* (or "gathering") "to a head," and when it has broken, favour the exit of the matter.

When making a *poultice*, its size must be regulated according to the purpose for which it is needed. For reducing inflammation, relieving pain, or assisting an *Abscess* to burst, a poultice large enough to cover the whole—and reach beyond—the inflamed part is required. On the other hand, when the *Abscess* has given way, the poultice should only be a little larger than the hole through which the matter pours, otherwise troublesome irritation and soreness of the surrounding skin is the result. Under such conditions, a piece of plaster (opium plaster, if there is much pain) is placed on the affected part, a hole being cut in the centre of the plaster only slightly larger than the aperture in the skin; this protects the surrounding skin from the action of the poultice.

The essential qualities of a good poultice are its heat, moisture, and softness. To retain heat and moisture a certain degree of thickness is necessary, say about half an inch as a rule. In some cases, however, as *Inflammation of the bowels*, or the disease termed *Peritonitis*, the inflamed parts are so tender that only the thinnest poultices can be borne. Then, again, poultices should not be left on till they get cold and dry, so it is requisite to change them at stated intervals, usually about every two or three hours; and they should, moreover, be applied freshly made and as hot as can be borne. Poultices are spread on linen, tow, or preferably on cotton-wool or old flannel, as these two last named help to keep the heat in. Poultices spread on linen may be covered outside with layers of cotton-wool (which is very light), flannel, oil-silk, gutta-percha tissue, or other waterproof material, and so arranged they retain their heat and moisture for longer periods. Very frequently poultices are ordered to be applied both to the back and front of the chest; and then a *jacket poultice* often proves useful, as it does not so easily slip. This is made by spreading the poultice on a piece of linen large enough to wrap around the back and meet in front, the linen being previously provided with tapes, which are arranged to tie over the shoulders and at three places in front of the chest. Dr. Cosgrave suggests that "a jacket poultice can also be fastened on with two Esmarch triangular bandages, the long edges running over one shoulder and under the other armpit, the corner going under the second armpit. The back bandage should be put on first. The bandages are, or course, made to cross in different directions."[1]

Poultices provided with an outer waterproof covering possess the advantage that they do not require changing so frequently, since the heat and moisture is better retained. Under any circumstances, a poultice should not be changed until the fresh one is ready to put on; but you must be careful in your haste not to apply the new poultice so hot as to cause the patient needless pain. This precaution is specially necessary if treating children, when you should first test the heat of the poultice by applying it to your own cheek. Another way is to lay a piece of flannel between the poultice and the child's skin, withdrawing the flannel when the little patient becomes accustomed to the heat.

In applying a poultice of any size it is more convenient to carry it on the left hand, and lay it on from below upwards; in removing one the reverse method is the best—that is, rolling the poultice (inwardly) from above downwards, gently cleaning all fragments from the skin as you peel the poultice off.

Poultices are made of different materials, and vary somewhat in their properties according to the substances of which they are composed. You will need practical instruction, and have to practise much yourselves, in order to become good poultice-makers. Yet a few general directions as to the way in which you should set to work may be of use. Most poultices may be made in at least two, if not more different ways; and varying descriptions of these methods are given by different authorities. I think I cannot do better than place before you the exceedingly clear instructions of Dr. Ringer in regard to poultice-making. He writes as follows:—"In making a poultice care should be taken that the water boils, and that all the materials, linseed meal, linen, strappings, bandages, or tapes, wool, and oil-silk, are close at hand ready for use, and placed before a good fire to be thoroughly warmed. To manufacture a linseed poultice sufficient boiling water should be poured into a heated bowl, and the meal must be quickly sprinkled into the bowl with one hand, while with the other the mixture must be constantly stirred with a knife or spatula till sufficient meal has been added to make a thin and smooth dough. The mixture should be compounded as rapidly as possible, otherwise the poultice when made will be almost cold. Only an experienced hand can make a model poultice. By adding the meal to the water, with constant stirring, instead of the water to the meal, a thorough blending of the two ingredients is ensured, not a knotty, lumpy, uncomfortable mass, too often vexing instead of soothing the patient. The dough must then be spread quickly and even on the warm linen, already cut of proper size and shape, the edges of the linen turned a little way over the meal to prevent any portion escaping beyond the linen, and to protect the patient's clothes."[1]

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[1] *Hints and Helps for Home Nursing and Hygiene.*

As to *bread poultices*, the same authority explains that there are two ways of making them. " One way is to cut the bread in thickish slices, put it into a basin, pour boiling water over it, and place the soaking mass by the fire for five minutes; then pour off the water, add fresh boiling water and place by the fire, afterwards draining the bread, beat up with a fork, and spread the poultice. The other plan is to cut stale bread into thick slices into a saucepan and pour enough boiling water over it to cover it, place the whole by the fire, and allow it to simmer for a short time, then strain and prepare the poultice. The first plan makes a porous poultice, the second a more compact poultice, sharing the character of linseed meal."[2]

Then as to *starch poultices*, they are " entirely unirritating, and retain their heat for a considerable time. The way to proceed is to add a little cold water to the starch, and to blend the two into a pap; then add sufficient boiling water to make a poultice of the required consistence, which must be spread on linen in the manner already described."[3]

There are *charcoal poultices* too. Charcoal " is used to prevent disagreeable odours from foul sores, and it is thought also to promote a healthy condition of the tissues. When employed for this double purpose charcoal is added to the poultice. As a porous poultice is here required, bread is better for the purpose than linseed meal. A portion of the charcoal should be uniformly mixed with the bread, but the greater part should be sprinkled over the surface of the poultice."[1]

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[1] *Handbook of Therapeutics:* Dr. Ringer.

[2] *Ibid.*

[3] *Ibid.*

Then *yeast poultices* can be "made in two ways. Yeast and water may be added to flour till ordinary dough is made, and the dough is applied while fermentation is going on. In this case it is simply an application of 'rising dough.' The other way is to smear warm yeast over the surface of a simple bread poultice."

Carrot poultices are said to "make wounds cleaner and healthier," and are "made by boiling carrots till they become quite soft, mashing them with a fork, and spreading the pulp on the linen in the ordinary way."[2]

For the purpose of relieving pain, *laudanum* is sometimes scattered or sprinkled on the surface of poultices; or the poultice is made with *decoction of poppy heads*, instead of water simply. (Poppy-head decoction is made by boiling 2 oz. of bruised poppy heads with 30 oz. of water for ten minutes in a covered vessel, and straining.)

Hemlock (or *conium*) *poultices* are used to relieve pain, and are directed in the British Pharmacopœia to be made thus:—Take juice of hemlock, 1 oz.; linseed meal, 4 oz.; boiling water, 10 oz. Evaporate the hemlock juice to half its volume, add this to the linseed meal and water previously mixed, and stir them together.

Poultices of *hops*, or of *poppy heads and chamomile flowers*, are used for a similar purpose.

Chlorinated soda (or *chlorine*) *poultices* are used for application to offensive sores or wounds. The way to prepare them is to take solution of chlorinated soda, 1 oz.; linseed meal, 2 oz.; boiling water, 4 oz.; add the linseed meal gradually to the water, stirring constantly, then mix in the solution of chlorinated soda.

Mustard poultices or *plasters* (or *sinapisms*) are used for their irritating effects on the surface of the body—to relieve pain and mischief in the deeper tissues; they are applied to produce, in a word, *counter-irritation*. The active principle of mustard is driven off by boiling water, so that these poultices have to be compounded with *tepid, lukewarm,* or, it may be, *cold* water. If wanted strong, mustard alone mixed with water is used; but usually the poultice is weakened by the addition of flour, bread, oatmeal, or linseed meal. The British Pharmacopœia directions are—Mustard in powder, 2½ oz.; linseed meal, 2½ oz.; boiling water and water, a sufficiency; mix the linseed meal with 6 to 8 oz. of boiling water and add the mustard, previously mixed with 2 to 3 oz. of lukewarm water, and stir them together. These poultices should have a layer of muslin or tissue-paper interposed between them and the skin, to prevent the mustard sticking and to lessen excessive pain and blistering of the skin; they cause a smarting, burning, painful sensation, and cannot be borne (when strong) for more than a quarter of an hour or twenty minutes. Indeed, much care should be taken that they do not "blister," as sores thus produced are both painful and difficult to cure. On removing a mustard poultice the part should be gently sponged with warm water and covered with cotton-wool.

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[1] *Handbook of Therapeutics:* Dr. Ringer.

[2] *Ibid.*

Mustard paper and *mustard leaves* form other useful means of applying this counter-irritant, and these have the advantage of being clean, readily applied, and effective in action. The "paper" or the "leaf" is immersed in cold or tepid water for a few seconds, and then laid on the skin, being kept in the proper place by a bandage or handkerchief. These applications cause much smarting and pain, and it is therefore desirable to interpose a layer of muslin between them and the skin.

Fomentations consist in the application of flannel or soft blanketing wrung out as dry as possible from boiling water. They have the advantage of being light, and easily borne by even tender parts, of being cleanly, and easily made and applied. They soon lose their heat, however, so require to be renewed every ten minutes or quarter of an hour. The way to proceed is to lay a *wringer* (or failing that a towel) across a vessel or bowl, place your flannel or piece of soft blanket on the wringer, pour boiling water freely over it, rapidly twist the wringer or towel in opposite directions so as to wring the flannel as dry as possible, remove the flannel and shake it out, apply as hot as the patient can bear it, and lastly cover with oil-silk, mackintosh, spongio-piline, or other waterproof material—failing that, with other folds of flannel.

It is important to wring the flannel out as dry as possible, so as to avoid scalding the patient and wetting him and the bed. "A perfect wringing machine may be quickly made by loosely stitching in the two ends of the towel round pieces of wood—a walking-stick cut in half answers the purpose perfectly."[1]

Spongio-piline may be used instead of flannel if the latter is not available, especially for small fomentations, and is very suitable, being soft and spongy on the one surface, waterproof on the other. *Sponges* are more adapted for the purpose under some circumstances, by reason of their lightness, as when applied over the windpipe. In any case, after the fomentations are stopped, the skin should be dried and covered with warm flannel or cotton-wool.

To promote the soothing effect of fomentations, these are sometimes wrung out of decoction of poppy heads, chamomile flowers, or other plants, instead of simple boiling water; or laudanum, or tincture of belladonna are sprinkled on the flannel just previous to application. Turpentine is sprinkled over the fomentation flannel when counter-irritation is needed, the application being known as a *turpentine stupe.* Care must be taken not to rashly continue these stupes too long, or great redness and smarting of the skin, perhaps even blistering, may result.

The application of *dry heat* is used when it is required to impart warmth to the body without the softening and relaxing effects of moisture. Of such a nature are *hot water bottles* (Fig. 41), *bags* (Fig. 42), and *tins* (Fig. 43); *heated bricks, tiles, plates,* and *irons; hot flannels;* and *bags of hot bran, sand, salt,* or *chamomile flowers.* Hot water bottles, heated bricks, &c., should be carefully wrapped in flannel before use, so as to be comfortable and not unduly hot to the patient. They should be changed, too, in the early morning, as at that time the bottles or bricks used at night are getting cool, and the powers of the patient are at a low ebb, both warmth and suitable sustenance being needed. Special watchfulness must be exer-

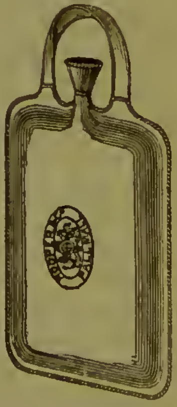

Fig. 41.—Elastic Hot Water Bottle, for feet, stomach, chest, &c.

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[1] *Cottage Hospitals:* H. C. Burdett.

cised in applying dry heat to insensible or paralysed patients, as the latter being unable to feel pain, scorching or even extensive blistering of the skin may ensue without any complaint being made. The use of strongly heated bricks is attended with other risks, for the bedding may be set on fire, and require (as I have known it) ejection through the sick-room window—surely rather a startling episode in the management of a patient! Hot water bottles or tins retain their heat well. Flannels heated soon cool; bags of hot sand keep their heat well, but the sand is heavy; chamomile flowers are lighter of course than sand, but soon cool; in populous districts bags of hot salt or plates and tiles heated and wrapped in flannel are favourite applications. These means of applying dry heat are useful for the relief of pain, especially of spasms, and for the maintenance of the bodily temperature in cases of great exhaustion and collapse.

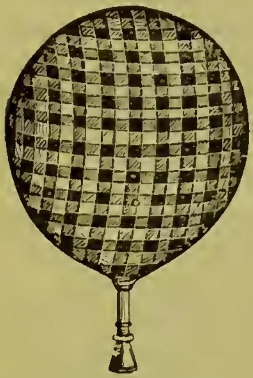

Fig. 42.—Hot Water Bag.

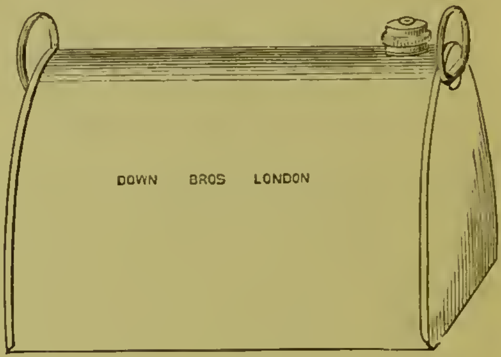

Fig. 43.—Tin Foot-Warmer.

Certain substances, as mustard poultices, blisters, iodine liniment, and croton oil liniment, are applied to produce *counter-irritation*, and are called *counter-irritants*. These cause redness and smarting of the skin, in some instances the formation of vesicles or blebs of liquid withdrawn from the minute blood-vessels. This liquid contains a very important ingredient of the blood, *albumen;* and if much is withdrawn from the body, as in extensive blistering, the loss of so much fluid and albumen produces considerable weakness. The redness, tenderness, and irritation produced by less severe counter-irritation produce somewhat different effects, the redness being caused by increased fulness of the blood-vessels of the skin to the relief of the deeper tissues, and the irritation having a stimulating and exciting effect on the body both generally and locally. Counter-irritation is therefore much used to relieve pain, congestion, and inflammation of the deeper tissues and organs, and also as a sharp stimulant in cases of great prostration or partial insensibility. *Fly blistering plaster* cut to the required size and shape is applied closely to the skin, and kept in place by strips of sticking plaster or a soft pad with a handkerchief or bandage. If redness, smarting, and irritation (the stimulating effect of the blister) without actual blistering is required, the plaster must be removed in two hours at the outside; and such applications used successively to different parts of the body are termed *flying blisters.* If the plaster is left on longer a blister or bleb of liquid forms in from six to twelve hours, and you must follow your doctor's instructions in the management of this. If the fluid is to be let out, snip the blister at its most dependent spot, having first placed a soft towel or layer of wadding to absorb the liquid as it drains off (thereby preventing a wet), or catching the fluid in a cup or other vessel to be measured. Finally a dressing of simple ointment, vaseline, zinc ointment, or olive oil on lint should be applied, with an outer soft layer of wadding kept in place by a light bandage. A similar dressing or merely a layer of cotton-wool is needed when the blister is to be left untouched, or when the result of the application is redness and soreness without the formation of any blebs. In the case of the very young and the aged, blisters should be removed when redness of the skin is produced (that is, in about two hours), a bread poultice being then applied to raise the bleb or fluid. If such a precaution is not taken ulceration of the deeper portion of the skin may follow. Under some conditions, as when it is impossible to keep a blistering plaster in its proper place, or if it is needed to cause a blister rapidly, *blistering fluid* or *liquid* is used. This is painted over the skin with a camel's-hair brush two or three times, and the effect hastened by a linseed poultice; but you should be careful not to allow the liquid to run down over portions of the skin which it is not desired to blister.

Croton oil liniment is rubbed on the skin for its counter-irritant properties once or twice daily, as is also *tartar emetic ointment. Iodine liniment* for similar purposes is lightly painted on with a camel's-hair brush. You should be careful not to discolour your own hands when applying the iodine, and remember to wash your hands well after rubbing with the croton oil and tartar emetic preparations.

LECTURE VIII

DETAILS OF NURSING (*continued*) AND NURSING GUILDS OR CORPS

Leeches—Dry and wet cupping—Inhalations—Bronchitis kettles—Enemata—Suppositories—Applications to eye, nostrils, and ear—Ointments, liniments, medicines, pills, powders, confections, and their application or administration—The roller bandage and its application—Nursing guilds or corps.

You may be required to apply *leeches* for abstracting blood. The skin should be washed with soap and water to clear away all greasy matter, and again bathed to get rid of all soap. To induce the leeches to bite, the part is often smeared with cream, milk, or a little sugar and water; a better plan still is to make the faintest possible scratch with a needle or lancet just sufficient to draw a drop of blood. You should meddle with the leeches as little as possible, but you can best move and dry them with a very soft towel; and to restrain them within due limits you can apply them in an inverted wineglass, chip ointment box, test-tube, or in a proper *leech-glass*. If either of the two last-named articles is used, take care that the head of the leech (not its tail) is at the outlet, as the creature is unable to turn in such a narrow tube, and, of course, unless the head is next the patient it cannot bite. In the case of a test-tube it is well to stuff the greater portion of it with cotton-wool, leaving only sufficient space at the open end for the body of the leech. Leeches will bite more readily when placed in their natural element—water. You may therefore put the leeches in a wineglassful of water, cover with a card, invert the glass carefully on to the chosen spot, gently draw away the card, and when the leeches fasten on, slightly raise the edge of the glass, receiving the water on a towel or sponge. The same plan may be readily practised with a test-tube. Yet another method is to scoop out the inside of half an apple so as to form a cup of rind in which the leeches are placed, the cup being then inverted on the selected spot; and it is said that "leeches thus applied will bite at once." If it is necessary to apply leeches within the mouth a piece of thread should be fastened to the tail, so that you may hinder it from moving too far. If by mischance a leech is swallowed, a draught of salt in warm water should be given as soon as possible.[1]

In applying leeches there are one or two precautions to remember; do not place them over or close to a vein, or troublesome bleeding may result, but when possible apply them over a bony prominence, so that pressure may easily stop bleeding if too free.

The leech is provided with a sucker at each end of its body, the head with three jaws (each of which has a row of teeth) being in the sucker at the narrower extremity of the animal. When the leech fastens the sucker lays hold, the jaws move, and a minute triangular wound is caused deep enough to produce a permanent mark; blood is withdrawn by the suction of the animal to the extent of a teaspoonful or a teaspoonful and a half, but "each leech may be calculated to remove about half an ounce of blood, between what it sucks and that which is lost after it drops off." When a leech has taken its fill it usually loosens and drops off, otherwise a sprinkling of salt will soon make the animal let go; but under no circumstances pull a leech off, as the teeth may thereby be left in the skin and lead to a painful sore.

After the leeches have dropped, bleeding may be readily encouraged (if desired) by bathing with warm water and applying a linseed poultice. If no further loss of blood is wished, sponge the skin over clean, and apply a pad of lint or cotton-wool and a bandage. If the bleeding is obstinate, firm pressure with the finger or by means of a pad and bandage on the bleeding point checks it; it usually suffices to press for a little time with a piece of cotton-wool or lint, when a small clot forms and the oozing ceases. If the leech bite is on a part where pressure cannot be properly applied in the usual way, as over the windpipe, you may easily squeeze up the skin between the finger and thumb tightly enough to stop the bleeding. The application of bits of lint steeped in tincture of steel, solution of alum, or iced water is of use for the same purpose.

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[1] Or "a couple of glasses of port wine, which acts as a poison to the animal, should be swallowed in all haste," to be followed by the "most convenient emetic, such as a saturated solution of common salt in lukewarm water without delay."—*Neligan's Materia Medica:* Dr. Macnamara.

You may be asked to assist in *dry cupping* or *wet cupping* a patient. Special apparatus is made for this purpose, such as small cup-shaped glasses, a spirit-torch, and an instrument called a scarificator. If these are not available, place a little spirits of wine in a cup, and provide some blotting-paper or cotton-wool, a candle, and a few small glasses—wine or claret glasses, for instance. Sponge the skin first with warm water, then dip a piece of blotting-paper or cotton-wool (as the case may be) in the spirit, light it, and place it in a glass, and before the latter becomes too hot invert it on the skin (at the same time getting rid of the paper), taking care that the rim of the glass fits evenly and closely on the body. The air being exhausted in the glass, the skin rises up in the latter, and its blood-vessels become gorged with blood. The other glasses are put on successively in the same way, and are kept on for a variable time according to your instructions. To remove a glass, press your finger-nail beneath the rim so as to admit air. This is *dry* cupping. In *wet* cupping, the skin is cut in several places by the scarificator before the application of the cupping-glasses, and blood is thereby abstracted. You will, however, need practical instruction in the management of dry and wet cupping with the specially constructed apparatus.

By the term *inhalation* is meant usually the breathing of steam—steam by itself or mingled with the vapour of some drug. A very simple but extremely useful inhalation may be improvised by pouring boiling water into a jug, over which the patient holds his face (inhaling the steam), a towel being arranged like a curtain so as to envelop the patient's head and the jug; or instead, a towel may be wound around the rim of the jug in a circular form, on which the patient may rest his face to inhale the steam. The temperature of the vapour inhaled should be from 130° F. to 150° F., not more; and in many of the different ingenious *inhalers* constructed for inhalations, a thermometer is inserted as a guide (Fig. 44).

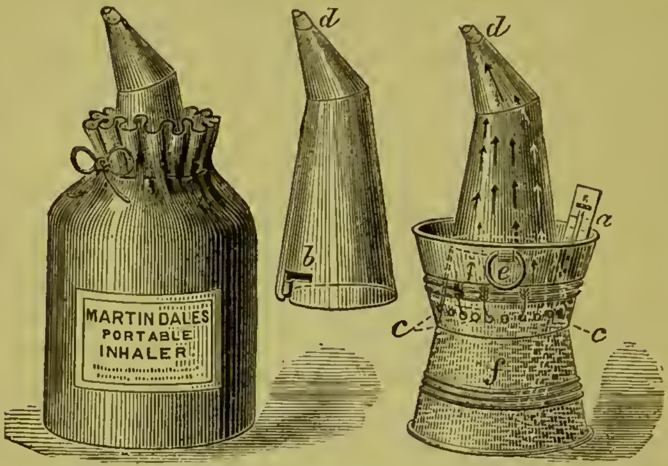

Fig. 44.—Martindale's Inhaler. The apparatus is shown ready for use in one figure; the upper part is disconnected from the lower chamber in the middle figure (*d b*); and the apparatus is shown without its cover in the remaining figure (*c d a c f*). This last figure shows the thermometer (*a*) in position; when in use, the lower chamber (*f*) is filled with water at the required temperature (about 140° to 150° F.), until the holes (*c c*) establishing communication between the interior and the outside channel are about a quarter of an inch below the surface of the liquid; *d d* is an earthenware mouthpiece; *e* is a ring handle.

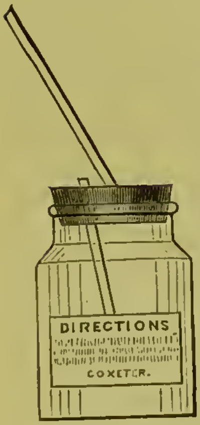

Fig. 45.—The "Murch" Hospital Inhaler.

Dr. Lennox Browne mentions a very cheap, simple, yet efficient inhaler which may prove of great service. "It consists of an ordinary quart glass pickle-bottle, closed by a cork bung perforated for tubes, as shown in the illustration. To obviate the necessity for a thermometer, the label is so placed that by pouring cold water up to the level of its *lower* border, and then adding boiling water to that of its *upper* border, a temperature of 140° F to 150° F. is attained. The cost of this apparatus is one shilling"[1] (Fig. 45). Such *hot* and *moist* inhalations are spoken of as *steam inhalations;* these may be simple, or some ingredient may be added, as, for instance, a teaspoonful of Friar's balsam to a pint of hot water. Some moist inhalations are *cold*, but you would receive special instructions in such matters. The instructions given by Dr. Lennox Browne in regard to steam inhalations *for ordinary use* are as follows:—"The medicament being added to a pint of hot water at the prescribed temperature, the vapour should be *inhaled* by means of full but not exaggerated inspirations, and should then be gently exhaled through the nostrils; in this manner six to eight inhalations may be taken each minute."[1] Then there are also *atomised fluid inhalations*, which are managed by squirting, so to speak, medicated solutions as a very delicate spray, into the throat and air-passages (Fig. 46). *Respirator inhalations* are arranged by soaking the sponge or tow in the middle of a specially made respirator with the required medicament, and the vapour of the latter mingles with the air during inspiration (Fig. 47). *Fumigations* or *fuming inhalations* are those derived from burning substances, as cut dried stramonium leaves, paper saturated with nitre or other substances. As to the *time of using inhalations*, it is best to

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[1] *The Throat and its Diseases.*

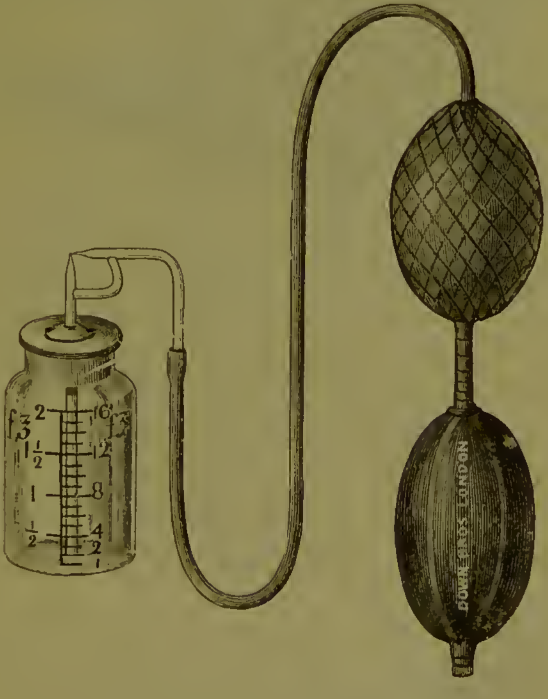

Fig. 46.—Spray Producer, for atomised fluid inhalations, &c.

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[1] *The Throat and its Diseases.*

take them before meals; and in the case of *hot* inhalations, the patient should not go out of doors for at least half an hour afterwards, so as to avoid the risk of taking cold.

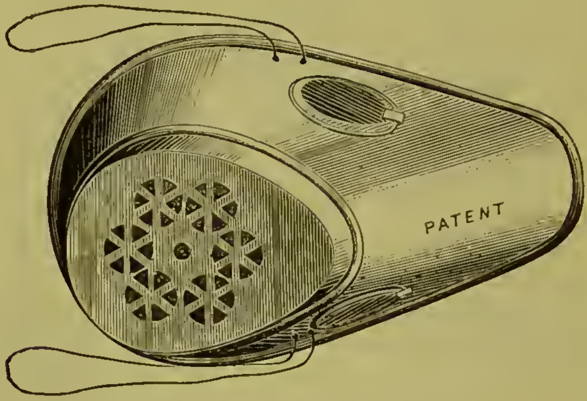

Fig. 47.—Naso-oral Inhaling Respirator.

Bronchitis or *steam kettles* (Figs. 48 and 49), provided with long spouts, and made either to be heated by a spirit lamp or placed on the fire, are useful for adding moisture to the air of the room, when needed in *Bronchitis* or similar cases. These are often, under such circumstances, of additional

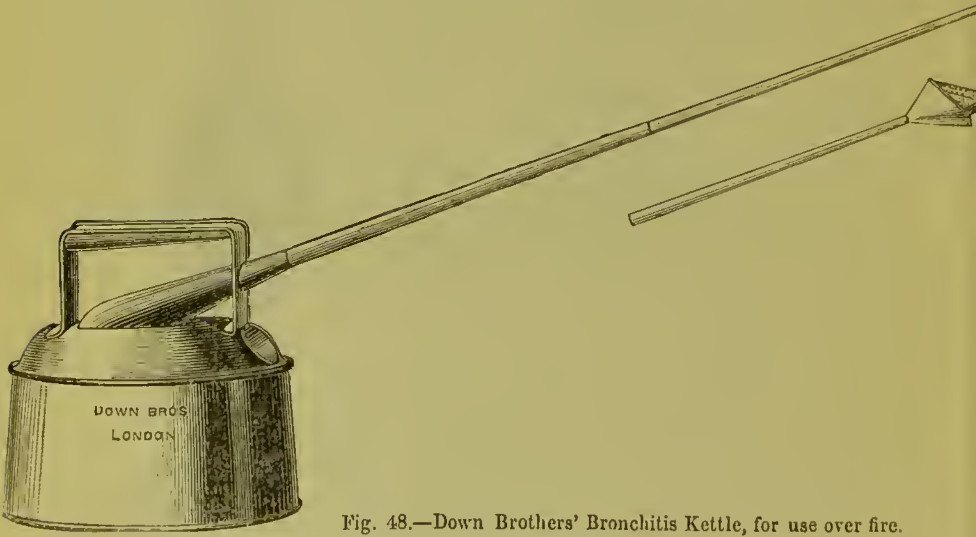

Fig. 48.—Down Brothers' Bronchitis Kettle, for use over fire.

service in keeping up the temperature of the room, which the medical attendant frequently directs to be from 65° F. to 67° F.[1]

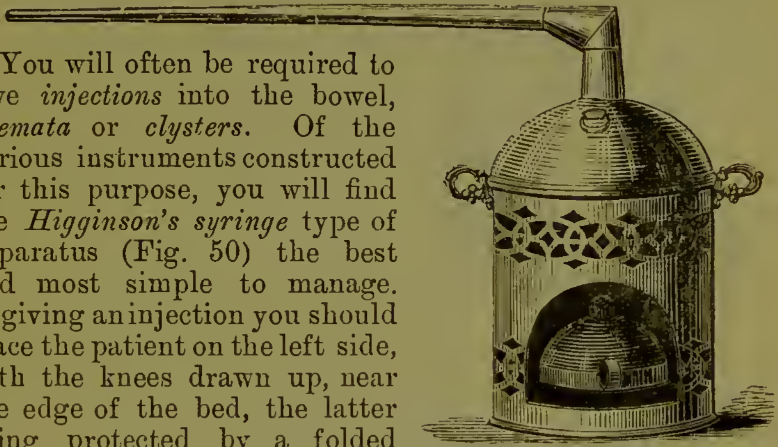

Fig. 49.—Allen's Bronchitis Kettle, with stand and spirit lamp.

You will often be required to give *injections* into the bowel, *enemata* or *clysters*. Of the various instruments constructed for this purpose, you will find the *Higginson's syringe* type of apparatus (Fig. 50) the best and most simple to manage. In giving an injection you should place the patient on the left side, with the knees drawn up, near the edge of the bed, the latter being protected by a folded sheet and a waterproof. The bowl containing the injection should be placed on a chair or stool close to the side of the bed, and the nozzle of the syringe must always be well oiled. It is well to work the syringe before using it, with warm water, to be sure that its valves act properly, and that the instrument altogether works well, and also for the purpose of warming it. You should also provide yourself with a towel, and place the bed-pan or night-commode handy. All being ready, the metallic end of the apparatus is put into the injection, and by first squeezing the bag and then allowing it to expand, the syringe becomes charged, then introduce the oiled nozzle into the bowel (or *rectum*), and gently pump up the injection. Injections given for the purpose of *causing the bowels to act* need to be large, one, two, or three pints, sometimes even more; you cannot pump up such quantities, however, straight away. After quietly injecting for a short time, the patient always feels griping pains and a strong desire to evacuate the bowels; you should then cease pumping, encourage the patient to restrain himself, and help him further by pressing the towel (folded) up against the bowel. In a little time the colicky feelings subside, and you pump gently again, stopping when the griping sensations recur; and by going on gradually in this manner, a large amount of fluid can be injected. Lastly, the nozzle of the apparatus is carefully withdrawn, the folded towel pressed firmly against the bowel, and the patient asked to control himself until the desire to go to stool becomes overpowering. Such injections usually are made of soap and water or thin gruel, but of whatever composition, care must be taken that there are no particles large enough to clog the valves of the syringe. A tablespoonful of *turpentine*, or two or three tablespoonfuls of *castor oil* (or both) are sometimes added to these injections to increase their power. In such a case, the oil or turpentine is mixed well with a small portion of the injection and pumped up first, the remainder of the injection being then passed into the bowel. This is done as the oil and turpentine float on the surface of the injection, and would, except for this precaution, be the last pumped up. The injection should be comfortably warm, but not too hot,—about 95° F. or 98° F., unless otherwise ordered; at such a temperature simple injections have a soothing effect on the bowels in painful disorders, and if fortified by *turpentine* or *assafœtida* are of great service in getting rid of flatulence.

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[1] An excellent way of improvising a bronchitis kettle is given by Mrs. Dacre Craven; a tube of sufficient length is made by fitting tin "pea-shooters" one into another, and this is fitted on to the "spout of an ordinary kettle, half filled with boiling water, and placed on the fire. This extemporary tin tube can be bent to any shape required, and made of any length."—*Guide to District Nurses.*

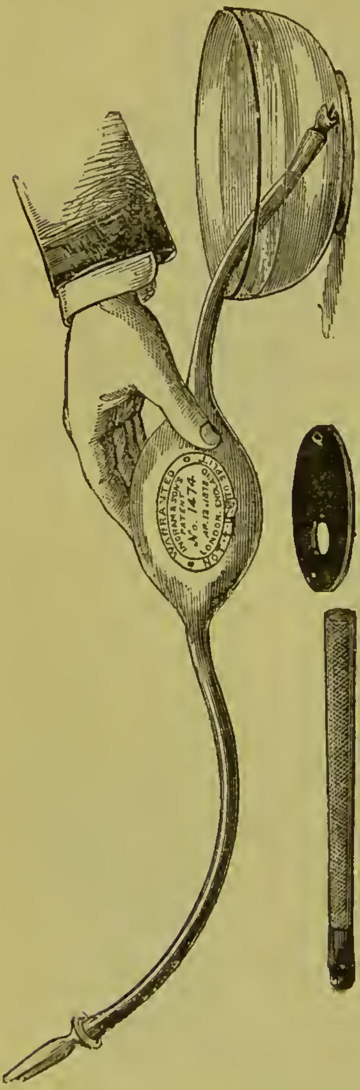

Fig. 50.—Higginson's Enema Syringe.

Injections used to *relieve pain* or to *check diarrhœa* are small in quantity (about two tablespoonfuls), so that they may be retained in the bowel. A common one consists of half a teaspoonful of laudanum in two or three tablespoonfuls of starch of the thickness of cream. Starch alone even has a restraining effect in diarrhœa, but its power is greatly heightened by the addition of laudanum. The temperature of these enemata should be 100° F., unless you are otherwise instructed. You will have to be especially careful in following your instructions in each case as to the quantity of laudanum, the amount of starch, and the temperature of the injection; it is best injected by a glass syringe of suitable construction, the nozzle of which should be well oiled, and it must be given very slowly, so as not to cause the bowels to act. A *ball syringe* (Fig. 51) of moderate size may be used, but the advantage of a glass instrument is that you can see what amount is being injected, and also better avoid injecting air with the liquid.

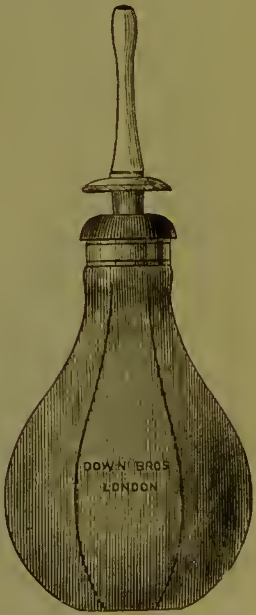

Fig. 51.—India-rubber Injection Syringe.

Similar precautions are required in giving *nutrient* or *nourishing enemata;* in other words, *injections of suitable food into the bowel,* when the patient is not able to take sustenance by the mouth. For this, the lower part of the bowel (*rectum*) must necessarily be empty so that the injection may come in contact with its lining membrane; if requisite, therefore, a soap and water enema must be given some time previously to empty the *rectum* of any evacuation. The nutrient enema must be itself small and of a non-irritating character, in order that it may be retained by the bowel, and it must consist of sustenance in a form which can be absorbed by the lining membrane of the bowel. About four ounces for each injection is a sufficient quantity; and peptonised substances, as beef-tea, milk, or cream, and eggs, with sometimes a little brandy, are used for the purpose, since peptones are readily absorbed by the bowel. These injections, as a rule, are administered at regular times, and it is very important to give them carefully and slowly, so that the bowel may not reject them.

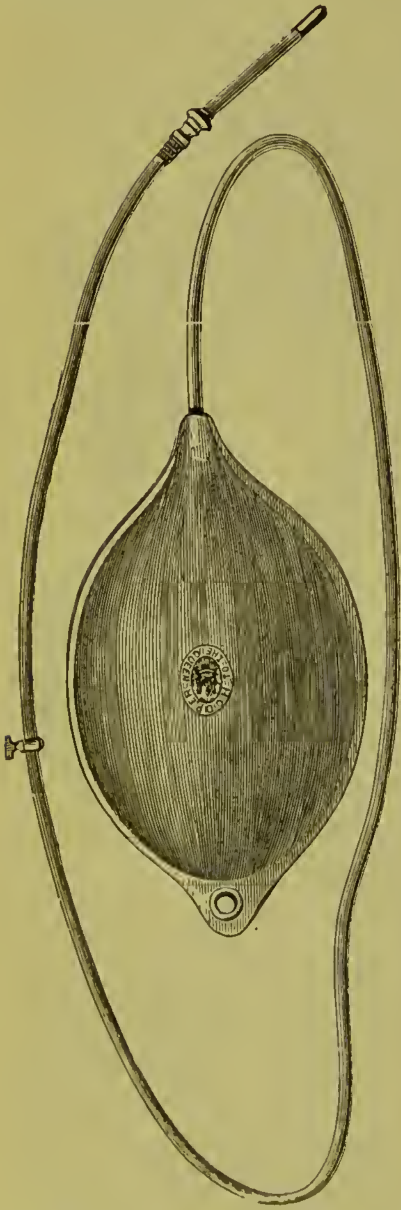

Fig. 52.—Hooper's Hydrostatic Enema and Uterine Douche.

Injections may be given *to destroy threadworms*, made, for example, by dissolving a teaspoonful of salt in half a pint of water, or instead of the salt a teaspoonful of tincture of iron may be added to the same quantity of water. Enemata for other purposes may be required in different cases, for which you would receive special instructions.

There is sold with the Higginson's syringe a special pipe, perforated with small holes near its closed end, which can be fitted on the nozzle of the apparatus (Fig. 50). This is used when the syringe is needed for giving *vaginal injections*. When such are required the patient lies on her back, with the knees drawn up, and you pass the tube, well oiled, under the right knee and then into the vagina. You proceed then to pump up the injection in the ordinary way, the fluid flowing on its return into a bed-pan or other receptacle placed under the patient for the purpose. A more simple plan is to use the *douche* (Fig. 52), which needs no pumping. In rendering assistance in such cases you must carefully attend to the doctor's instructions as to the nature of the liquid used (simple water or otherwise), its temperature (tepid, warm, hot, or cold), and other details.

Suppositories are small cone-shaped and smooth bodies composed of a fatty substance (usually cacao-butter) mixed with some drug, as morphia, tannic acid, or other medicament; and are used by passing them, smaller end upwards, into the bowel or *rectum.* The cacao-butter melts between 85° F. and 95° F. (*i. e.* below the natural heat of the body), and the contained medicament acts upon or becomes absorbed by the lining membrane of the bowel. Thus morphia suppositories are of great use in relieving pain, tannic acid ones are astringent, and so forth. There are other suppositories of a *nutrient* kind, useful when the patient cannot take food by the mouth. These are made with peptonised meat or peptonised milk, the peptones, as I have said, being readily absorbed by the lining membrane of the bowel. Patients can often insert suppositories themselves, but if not you may easily do so by putting the invalid to lie down on the left side, knees drawn up, close to the side of the bed, and then gently pushing the suppository, smaller end upwards, with your oiled finger about an inch into the bowel. You must do this gently and carefully, so as not to excite the bowel to action.

Medicated pessaries or *vaginal suppositories* resemble ordinary suppositories, but are larger in size, and are used for medicinal purposes by being passed into the vagina.

Applications to the eye.—Eye drops can be applied by a drop bottle (Fig. 53), a camel's-hair brush, a quill, a glass rod or tube, or, better still, by a special glass tube, drawn out nearly to a point at one end, the other terminating in an india-rubber cap (Fig. 54). The point being dipped into the lotion, and the cap squeezed gently and then allowed to expand, some of the liquid is drawn up the tube; to drop the fluid into the eye, you merely again squeeze the cap. In affections of the eye it often causes much distress to separate the lids; but you may readily draw down the lower lid a little so

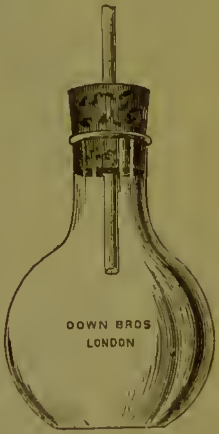

Fig. 53.—Liebreich's Drop Bottle, for the eye.

as to turn its red inner surface up, and by touching the latter with the wet camel's-hair brush or by dropping the lotion, and afterwards gently moving the upper lid up and down, the fluid will spread over the eye.

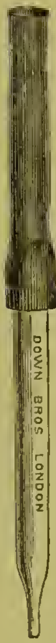

Fig. 54.—Drop Tube, with india-rubber cap.

An *eye lotion* or *wash* (or *collyrium*) is used by placing a little in a saucer or other small vessel, and bathing the eye by means of a clean piece of sponge or linen rag; the patient should also throw his head back and open the eyelids while the nurse drops some of the lotion into the eye. Often an eye lotion is mixed with tepid or warm water for use, but you should seek instructions as to this. These applications are also made sometimes by means of a *syphon douche.*

Eye salves or *ointments* are frequently directed to be smeared on the edges of the eyelids, but it is necessary first to remove all crusts or scales from the lids by smearing the latter with vaseline or sweet oil and then bathing with warm water. After the crusts have been removed the salve should be applied with a camel's-hair brush or even the finger.

Applications to the nostrils.—For nasal inhalations Dr. Lennox Browne directs that "an india-rubber nasal-piece should be placed on the mouthpiece of the inhaler (previously described); or the orifice, if a jug or other vessel is used, should be narrowed by a cone of cardboard. Insert this nasal-piece into one nostril, the mouth and the other nostril being closed; after inhaling, gently exhale through the mouth."[1] *Nasal douches* may be given with the *syphon douche* (Fig. 55), care being taken that the vulcanite nozzle fits the nostril accurately; and if you tell the patient to keep his mouth open (breathing entirely through it), the fluid comes down out of the opposite nostril without passing into the throat. Ordinary syringes are often used for injecting liquid into the nostrils to stop bleeding or for other purposes.

Syringing the ear is frequently needed, either to remove substances that have accidently got into it, or for clearing out wax. You place the patient on a chair, with the head leaning over on the affected side. It is convenient to have an ear-spout, which can be fixed in position below the ear, as it saves wetting the patient's clothes. The ear being then pulled gently upwards and backwards so as to straighten the passage of the ear, warm water is syringed steadily into it in a slightly upward direction. Before setting to work everything should be placed ready, the basin of warm water, and an empty basin beneath the patient's ear or the ear-spout; an assistant may conveniently help by holding the empty basin with one hand and raising the patient's ear upwards and backwards with the other. The *ear douche*, on the syphon plan, is also used.

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[1] *The Throat and its Diseases.*

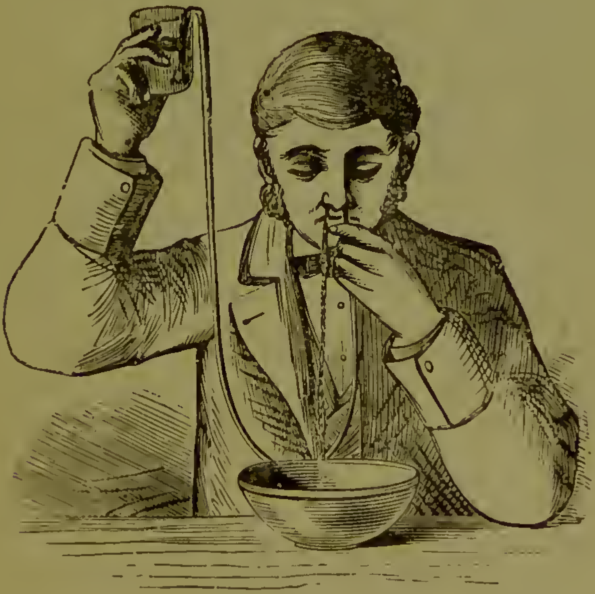


Fig. 55.—Syphon Douche.

Ointments are greasy external applications, and consist of some fatty material (as lard, vaseline, &c.), with which is usually mixed some other special ingredient. The more simple ointments are used for their softening, suppling, and protective effects; other ointments are applied for the relief of pain or for their astringent, counter-irritant, or other action, according to the special ingredients severally contained in them. Practically, such applications are mainly used in the treatment of wounds and sores, diseases of the skin, and parasitic diseases, as *Itch* and *Ringworm*. They are applied smoothly spread on lint or pieces of linen, these being kept in position by folds of a bandage or strips of plaster. In some instances the ointment is rubbed in, as when sulphur ointment is used for *Itch,* or mercurial ointment for its general effect on the system.

Liniments are used for external application, and too much care cannot be taken that the bottles containing them are labelled " Poison " in large letters, and that they are placed quite apart from medicine bottles and articles of food, and especially out of the reach of children. Terrible catastrophes have often occurred from neglect of such simple precautions, as these liquids are often extremely poisonous. They are used mainly for the relief of pain or for stimulating or counter-irritant effects. You pour some of the liniment into the palm of your hand and rub it firmly and thoroughly into the skin until absorbed; if the application is to an arm or leg, rub towards the body in the direction of the flow of blood in the veins (that is, towards the heart). Some liniments, on the contrary, are applied by being painted over the skin with a camel's-hair brush or feather, as, for instance, iodine liniment and aconite liniment. After using a liniment see that the bottle containing it is securely corked (to prevent evaporation), placed in a safe spot (to avoid accidents), and wash your hands thoroughly in soap and hot water.

In regard to liquid *medicines*, be careful to keep the bottles corked to prevent evaporation, as well as to keep out impurities, and always see that the bottles are properly labelled with directions and the patient's name. Further, read the directions always before giving the medicine; by following this rule, if by chance you have hold of the wrong bottle, you will find out your mistake before it is too late. It is your duty to carry out the directions on the medicine bottle strictly, both as regards the frequency of the dose, the time at which it is to be given, and accurate measurement of the medicine. Medicine is often ordered " every four hours," which means by night and day; but instructions should be asked for as to whether the patient is to be roused out of his sleep at night for the medicine or otherwise. "Three times a day" is another frequent direction, and if not informed as to the particular time of giving the medicine the first dose may be given about 10 A.M. or 11 A.M., the second about 2 P.M. or

3 P.M., and the last about 6 P.M. or 7 P.M.; but, unless otherwise ordered, at least half an hour's interval should elapse between a dose of medicine and a meal. Some medicines, as cod-liver oil and preparations of iron and arsenic, are best taken just after meals, as on a full stomach they are less liable to disagree. Other medicines again are given very frequently: thus aconite may be ordered in small doses every ten minutes for two hours. But if you stick to your instructions and the directions on the medicine bottle you cannot well go wrong.

Accuracy in measuring doses cannot be too strongly insisted upon. Though medicine is frequently directed to be given in "tablespoonfuls," "teaspoonfuls," and "drops," yet spoons of all kinds are too variable in size for any accuracy in measurement, and drops which are dropped out of the bottle also vary in size with the nature of the liquid and the shape of the mouth of the bottle. So it is highly necessary that you should measure all doses of medicine in a graduated *measure glass* (Figs. 56–59). Some measure glasses are marked or graduated in "teaspoons" and "tablespoons"; others in "drachms" and "ounces," or the symbols of these. It is necessary, therefore, for you to know the relative values of these measurements.

1 teaspoonful = 1 drachm = ʒj.
2 teaspoonfuls = 2 drachms = 1 dessertspoonful = ʒij.
3 ,, = 3 ,, = ʒiij.
4 ,, = 4 ,, = 1 tablespoonful = ½ oz. = ℥ss.
8 ,, = 8 ,, = 2 tablespoonfuls = 1 ,, = ℥j.

Similarly, drops or minims should be correctly measured.

1 drop = 1 minim = ♏j.
60 drops = 60 minims = 1 teaspoonful = 1 drachm = ʒj.

For measuring minute quantities 1-drachm or 2-drachm glass measures are used, accurately divided into minims.

After giving each dose of medicine never omit to thoroughly wash and clean the measure glass, and for the purpose of some particularly nauseous medicine (especially oils) it is better to use quite a separate glass.

Medicines are mixed in the way that renders them most agreeable to take; and it is the aim of prescribers to disguise or mask the nauseous flavour of one or other active drug by the addition of suitable ingredients. And this is an important matter, as an otherwise excellent medicine may excite nausea, vomiting, and straining, all of which are hurtful, unless its repulsive taste or smell is concealed by admixture with other substances. There are some remedies frequently ordered to be given, which it is the nurse's business to administer in the most fitting way. Of substances belonging to this class perhaps *castor oil* is, to the greater number of people, the most offensive. One of the best ways

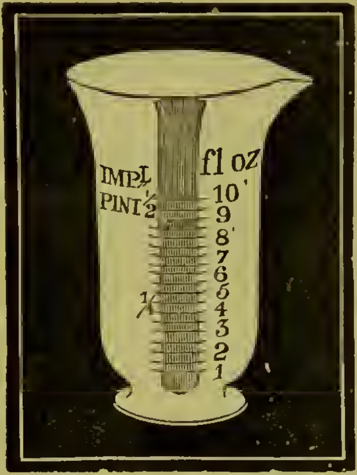


Fig. 56.—10-oz. Measure Glass, divided into "ounces," &c.

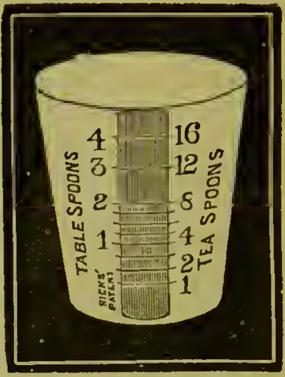


Fig. 57.—2-oz. Measure Glass, divided into "tablespoons" and "teaspoons."

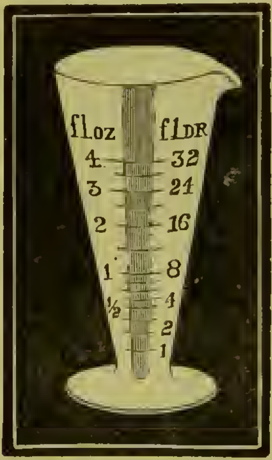
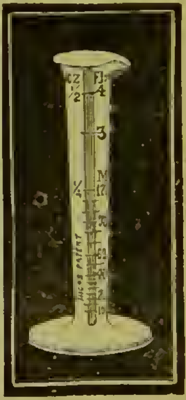


Fig. 58.—4-oz. Measure Glass, divided into "ounces," &c.



59.—½-oz. Measure Glass, divided into "drachms" and "minims."

of giving it is to take a bottle, rinse out with hot water, then pour into it hot milk, add the oil, shaking the bottle well until no oil can be seen, pour into a warm glass, dust some nutmeg or cinnamon over it, and get the patient to toss it well back in the mouth; if this plan is managed properly, no oil can be tasted. There are numerous other receipts: thus Dr. Ringer says, "Castor oil may be taken almost, if not quite, tastelessly in beef-tea, highly peppered and well salted; or the oil may be beaten up with an equal quantity of the froth of porter, and tossed off before the constituents have separated."[1] Dr. Cosgrave gives a plan by which (it is said) the oil is absolutely untasted:—"Some coffee is to be put into two cups, the oil is to be added to one and well beaten up, the mouth is then to be rinsed with some of the coffee in the other cup; the oil and coffee are to be swallowed, and the mouth once more rinsed with the remainder of the plain coffee."[2] There are one or two general rules in giving castor oil, or any other nauseous drug, which are useful in lessening the offensive flavour. Thus, the medicine should be tossed well back into the throat, and not allowed to touch the lips or teeth, and should be swallowed quickly—"bolted," so to speak. It is better, especially if the mouth is dry and parched, to rinse the mouth out with some pleasant tasting liquid (lemon-water, for instance) before taking the medicine; and if the latter has an offensive odour, either squeeze the nose with the fingers or insert wadding into the nostrils before taking the draught. "Tasteless" castor oil is now prepared by Messrs. Allen and Hanbury; and some patients can take this and no other variety of the oil. The same firm issue "perfected" cod-liver oil, which is described "as nearly tasteless as cod-liver oil can be." There is not usually the same difficulty with this, however, as there is with castor oil; for, with perseverance, patients can generally manage to take it. Dr. Ringer directs that "cod-liver oil should be taken after food on orange or ginger wine, or weak brandy and water, or some agreeable tincture of orange-peel, and should be so poured as not to touch the glass, but to float on the surface of the wine or the brandy as a globule, and thus tossed off. A little salt taken immediately before and after the dose often removes the taste, and prevents nausea, and it is said that a few drops of ketchup added to the oil will cover its taste."[1]

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[1] *Handbook of Therapeutics.*

[2] *Hints and Helps for Home Nursing and Hygiene.*

Medicines containing iron stain the teeth and discolour the tongue, and may be taken, therefore, through a quill or tube. "A teaspoonful of lemon juice," Dr. Ringer says, "covers the taste of iron preparations and tincture of steel. Milk, too, covers the styptic taste of iron."[2]

When required to give effervescing medicines, you are provided with two bottles usually, one a solution of bicarbonate of soda or potash (the *alkaline* mixture), the other a solution of either citric or tartaric acid (the *acid* mixture). You pour the prescribed quantities of these mixtures *into separate* glasses, then add the alkaline to the acid medicine, and give while effervescing. Sometimes, instead of an acid mixture, you are instructed to use a certain quantity of *lemon juice*. *Pills* nowadays are generally coated for the purpose of concealing the taste. This is all very well if the coating is of a material which will readily dissolve, as otherwise, of course, the pills are worse than useless, and may pass through the bowels in much the same state as when swallowed. Many persons have great difficulty in swallowing pills, though they may generally be got down by throwing the pill well back towards the throat and swallowing quickly a little water. Often a pill can easily be swallowed in a piece of bread. In cases where pills cannot really be swallowed, they can be easily crushed and mixed in a little hot milk or tea and then taken.

Powders are mixed with various articles to make them palatable, such as white or brown sugar, jam, or honey. Many, such as Dover's powder, are well given in a little warm milk. An excellent plan for children is that given by Dr. Cosgrave:—"Put a little bread and milk into a spoon, put the powder (mixed with sugar) on it, and cover it over with some more bread and milk."[3]

Confections and *electuaries* are medicines compounded in the form of preserve, and are given in a spoon.

Solutions of some strong medicines are *injected underneath the skin* by means of a specially constructed small syringe provided with a hollow sharp-pointed needle. This method of administering remedies is called *hypodermic* (or *subcutaneous*) *injection;* but if you are ever required to give medicine in this way, you will be carefully and practically instructed in the matter by the medical attendant.

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[1] *Handbook of Therapeutics.*

[2] *Ibid.*

[3] *Hints and Helps for Home Nursing and Hygiene.*

The *results of medicines*, in whatever manner you administer them, *should be observed and carefully noted.* Thus, after giving a sleeping draught, the length of time the patient sleeps and the character of his slumbers (heavy, light, restful, or restless) should be accurately noticed; and similarly, the effect of medicines given to check diarrhœa, sickness, pain, or other distressing symptoms should be carefully observed and reported by you to the medical attendant. Unexpected symptoms after medicines, as pain in the stomach, great nausea or vomiting, and signs of overdosing, excessive action of drugs, such as ringing in the ears after quinine, or enlargement of the pupils after belladonna, are, I need hardly say, points on which you should on no account fail to report.

It only remains for me now to make a few remarks on *bandaging.* In your First Aid Course you were taught the uses and ways of applying the triangular bandage, and also the simplest means of improvising bandages, padding, and splints. You now have to study the application of the *roller bandage*, and if you wish to become a good hand at bandaging with the roller you will have to practice very diligently.

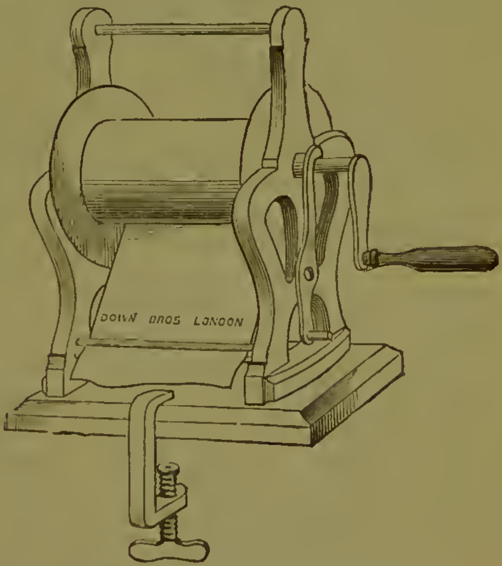

Fig. 60.—Bandage Roller or Winder.

Roller bandages consist of long strips of flannel, calico (bleached or unbleached), linen, domette, cotton net, stocking webbing, or other special material, and vary in width and length according to the portion of the body for which they are meant.

Roughly, the *length* of these bandages is from 4 to 8 or even 12 yards; the *breadth* is half an inch to three quarter inch for fingers or toes, 2 inches to 2½ inches for the head and upper limbs, 3 inches for lower limbs, and 4½ inches to 6 for the chest and abdomen. These bandages are rolled up tightly ready for use; and to save trouble a little apparatus, called a *bandage winder* (Fig. 60), may be procured for the purpose. Bandages may be bought wholesale so cheaply now-a-days that it is often scarcely worth the time and trouble to make them at home. Supposing you have no ready made ones by you, take a piece of flannel or calico, snip it with scissors along its width so as to mark the breadth of the bandages needed, and then tear off the strips successively from the length of the material, taking care that no hard "self edge" is left on any bandage; lastly, roll your bandages tightly up. To apply your bandage, *stand in front of the patient*, do not get on one side or the other of the limb you wish to

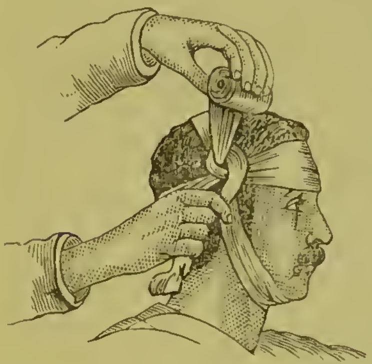

Fig. 61.—Twisted or Knotted Bandage for Head (from Mr. Walter Pye's *Surgical Handicraft*).

There are two ways of applying this. (*a*) *Mr. Pye's Method:* Supposing the temple is the spot on which pressure is to be applied, unroll the bandage about a foot, and hold the end with left hand close to temple. Carry bandage around forehead, side and back of head, until it reaches the unrolled end in the left hand; then twist bandage sharply down under jaw, up opposite side, over top of head, to unrolled end again. Make another sharp twist and carry bandage across forehead and around side and back of head as at first; and so on till sufficient pressure is got on the temple. Then tie the two ends. (*b*) *Mr. Berkeley Hill* describes the usual method. For this a "double headed" bandage is needed; that is, a bandage rolled up from each end till the two rolls meet in the middle. If an artery is wounded, a *graduated compress* is made by folding a piece of wine cork ⅓ inch thick in a double thickness of lint, placing over this 6 or 8 more folds of lint gradually increasing in size, and keeping the whole in place by passing a stitch through all. The compress is laid on the wound small end downward. Then "one end of the roller is taken in each hand, and the middle laid over the compress on the injured temple, say the right, the ends are next carried round the head, one just above the eyebrows, and the other backwards below" the prominence of the back of the head, "till they meet at the left temple, where they are passed from one hand to the other to be brought to the wounded temple. Here they are again crossed, but tightly, one end being carried under the chin and by the left side to" the top of the head, "there meeting the other end, which has passed over the head in the opposite direction. Here the hands again change ends, and the bandaging is continued till each end reaches the right temple. There they are again crossed or 'knotted,' but this time they are passed horizontally round the head. Having done this the ends are pinned and cut off, or if necessary the knots are repeated before fastening; but the first pair, if tightly drawn, suffice as well as several.

"To ensure firm pressure, care should be taken that each 'knot' overlies its predecessor" (*The Essentials of Bandaging*).

bandage (as most beginners do), but stand in front of your work. *Place the limb,* if it is an arm or leg you have to bandage, *in the position in which it is to be kept,* else the bandage will become unduly tight and painful in one or other part and interfere dangerously with the circulation; for

"The middle of the roller is laid against the forehead just above the brows, and the ends passed behind the" back of the head, "where they are crossed. After this, one end continues to encircle the head horizontally, fastening down at the forehead and" back of the head "alternately the other end of the roller as it goes forwards and backwards. The second head of the bandage, starting from the" back of the head, "is brought over the top along the middle to the bridge of the nose, and passes under the encircling turn, which fixes it. It is then carried back to the" back of the head, "on the right of the mesial band; when again fixed behind by the encircling turn, it is brought forward on the left side of the mesial band and fixed in front. This arrangement is repeated until the head is covered in a closely fitting cap.

"In beginning this bandage, it is necessary to keep the first circle low down, close to the brows in front, and below the" prominence of the back of the head, "or the cap will not fit firmly over the skull" (*Essentials of Bandaging*).

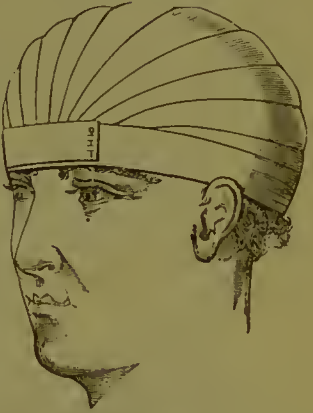

Fig. 62.—The Capelline Bandage. (From Mr. Berkeley Hill's *Essentials of Bandaging*.) A "double-headed" bandage is required.

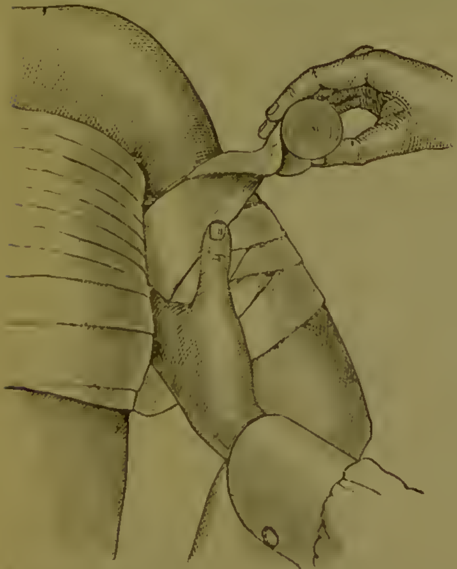

Fig. 63.—Application of the Reversed Spiral (from Mr. Walter Pye's *Surgical Handicraft*).

This reversing or turning requires a little knack, but is easily learned. The secret of doing it well consists in having the portion in the hand quite loose, so that by bringing the roller down, it naturally falls over. The thumb must, therefore, be holding the turn of the bandage last applied during this manœuvre. Moreover, the bandage should be brought across the limb with a good slope upwards, say 45° to its long axis, and the reverse similarly be brought boldly down, so that the bandage is well doubled over, otherwise some of the fold will appear on the other side of the limb when the bandage comes round.

"The most common fault is that of screwing the roller round on its own axis, instead of allowing the bandage to fall over into position, as it should do almost of its own accord" (*Surgical Handicraft*).

example, if you keep an arm straight while bandaging it up, and then bend the elbow at right angles, constriction of the limb near the elbow is the result. *Take hold of the roller with one hand*, and *with the other the free end of the bandage* and, while keeping the latter in its place, unwind the roller (*outer side of bandage being next the skin*), and *carrying it from the inner to the outer side* (*across the front*) of the limb. *Complete the circle by carrying it again to the inner side* (*round the back*) of the limb. By winding a bandage thus in a *simple spiral* around a part, as the wrist (Fig. 66), which only enlarges gradually, even pressure can be applied, and the bandage lies smoothly, the lower edge of each turn overlapping the upper edge of the turn below it to the extent of about one third or one half the breadth of the bandage. Where the limb increases in size, however, the simple spiral turns are unsuitable, as the upper border of each turn alone grasps the limb, the lower portion of each turn being quite slack and gaping. In bandaging up a limb, therefore, as it increases in size, you must pass from the simple spiral to the *reversed spiral* (Figs. 63, 66, 68, 69). To make a *reverse*, as the bandage is carried in front of the limb press the thumb or forefinger of your free hand on the

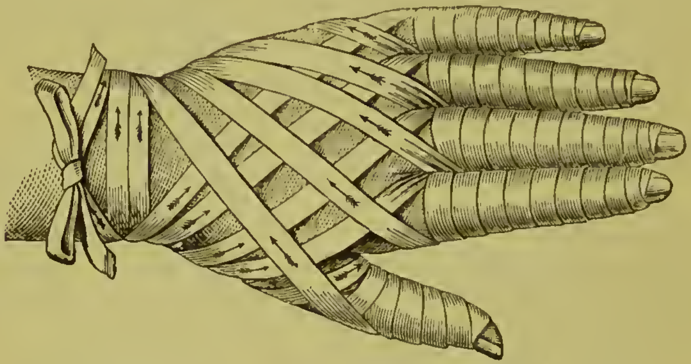

Fig. 64.—Bandage for all the fingers (from Mr. Heath's *Minor Surgery*).

"*To bandage one finger:* A bandage three quarters of an inch wide will be most convenient, and a couple of turns (leaving out a loose end) should be made round the wrist. The bandage is then brought over the back of the hand, and taken in a series of spirals to the tip of the finger, which it surrounds, and is brought back by regular spirals in the opposite direction to the root of the finger again; crossing the former bandage on the back of the hand, it finally surrounds the wrist, and can be finished off by making a knot and bow with the loose end. *To bandage all the fingers:* The bandage is carried round the wrist, and then spirally over the little finger as described above; it then passes round the wrist, and down to the ring finger and back to the wrist, and so to each finger and the thumb successively" (*Minor Surgery*). If great neatness is wished for, reversed spirals can be used instead of simple spirals.

lower border, and then holding the roller slack, bring it over and down so that the bandage overlaps (Fig. 63)—and, on being drawn tight, presses evenly and smoothly on the limb. After practice, you will not need to fix the lower border of the bandage with your thumb or finger, as you will soon get into the knack of making a reverse by tilting over the roller smartly as the turn of the bandage hangs slack, and then drawing tight. *The reverses should lie on the outer aspect of the limb* and be *arranged one above the other at equal distances*, so that the angles and edges of the bandages form a neat pattern (Figs. 63, 66, 68, 69). In no case should reverses be made over a bony prominence. Where the shape of the limb becomes more irregular, as, for instance, at the joints, the *figure-of-eight* bandage is used (Figs. 65–69), since in such positions neither the simple spiral nor the reversed spiral are applicable. A whole limb can be bandaged by the figure-of-eight method, and presents a similar appearance to a limb bandaged by the reverse spiral; but practically it is the custom, in bandaging limbs, to combine the simple spiral, reverse spiral, and figure-of-eight, so as to meet the varying irregularities of the limb.

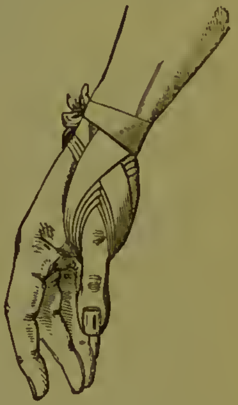

Fig. 65.—Spica of Thumb (from Mr. Berkeley Hill's *Essentials of Bandaging*).

Begin in the same way as when bandaging a finger, carry roller beyond first knuckle-joint; "the ball of the thumb is then covered by figures-of-eight round the thumb and wrist." (*Essentials of Bandaging*). If the whole thumb is to be bandaged, proceed first as usual with fingers, covering thumb with simple spirals or reverse spirals; finishing off with the spica over the ball.

It is not much use to dwell longer on the methods of bandaging the various parts of the body; nothing but practical teaching by your instructor, and frequent practice on your own part, can be of any real use to you in learning this portion of your duty. There are a few diagrams here (Figs. 61–69), with short instructions added, illustrative of some of the commoner methods of bandaging; and I trust that these (after you have received practical teaching) may serve as rough guides when practising amongst yourselves.

Now that these lectures are drawing to a conclusion, I must express a hope that you will try to establish in your district a Nursing Guild or Corps. By adopting this course, you

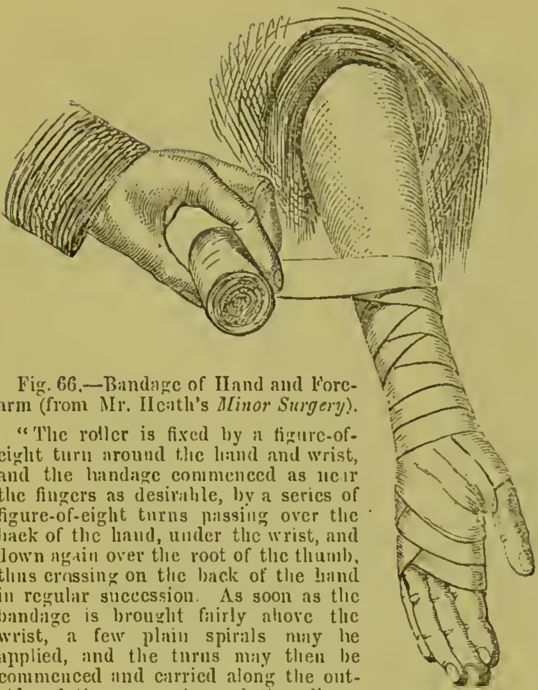

Fig. 66.—Bandage of Hand and Fore-arm (from Mr. Heath's *Minor Surgery*).

"The roller is fixed by a figure-of-eight turn around the hand and wrist, and the bandage commenced as near the fingers as desirable, by a series of figure-of-eight turns passing over the back of the hand, under the wrist, and down again over the root of the thumb, thus crossing on the back of the hand in regular succession. As soon as the bandage is brought fairly above the wrist, a few plain spirals may be applied, and the turns may then be commenced and carried along the outside of the arm. Around the elbow-joint the figure-of-eight turns should be resumed and applied as on the knee, and the turns may be again resumed in the upper arm" (*Minor Surgery*).

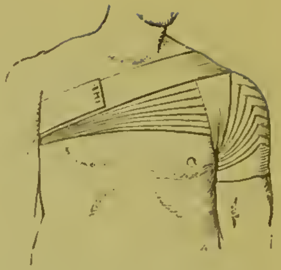

Fig. 67.—Spica of Shoulder (from Mr. Berkeley Hill's *Essentials of Bandaging*).

"*The arm* is covered by spirals and reverses till the arm-pit is reached (see Fig. 63). Before bandaging *the shoulder* the arm-pit is protected by cotton wool or a double fold of soft blanket; the roller is then carried in front of and over the shoulder, across the back to the opposite arm-pit, where also some wool should be placed, then across the chest to the top of the shoulder again, and under the arm-pit to the front. These figures-of-eight are repeated as often as necessary to complete the covering" (*Essentials of Bandaging*).

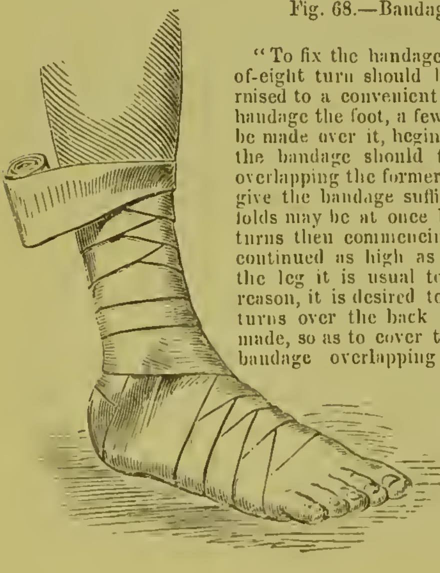

Fig. 68.—Bandage of Foot and Leg (from Mr. Heath's *Minor Surgery*).

"To fix the bandage firmly (a most important point) a figure-of-eight turn should be made around the ankle, the foot being raised to a convenient height upon a stool. If it is desirable to bandage the foot, a few spirals and turns (as in figure) may then be made over it, beginning at the roots of the toes; but if not, the bandage should take another figure-of-eight turn at once, overlapping the former by about one third of its width. This will give the bandage sufficient 'spring' up the leg, and the spiral folds may be at once begun, the first two or so being plain, the turns then commencing on the outer side of the leg, and being continued as high as the bandage goes. In simply bandaging the leg it is usual to leave the heel exposed; but if, for any reason, it is desired to cover the heel, a series of figure-of-eight turns over the back of the foot and behind the heel must be made, so as to cover the heel from below upwards, each turn of bandage overlapping that preceding it for half its width. *To bandage the ankle:* The method of applying the figure-of-eight to this joint is sufficiently explained in the above paragraphs. *To bandage the knee*: The figure-of-eight is to be used for this, but its application requires some little care, or it will be found to slip" (*Minor Surgery*). Practical instruction is needed to explain this.

will be enabled to keep up (and add to) your knowledge and skill in practical nursing, and also to render valuable assistance to your poorer brethren in times of sickness.

"*The point of the heel* (with the ankle-joint) may be completely covered by a series of enlarging figures-of-eight, starting from the centre, having the crossing placed over the front of the joint, and the loops above and below the line drawn from the middle of the front of the joint to the heel, and getting always more and more open, and further away from the middle line as the bandage progresses" (*Surgical Handicraft*). The elbow may be bandaged in a similar manner.

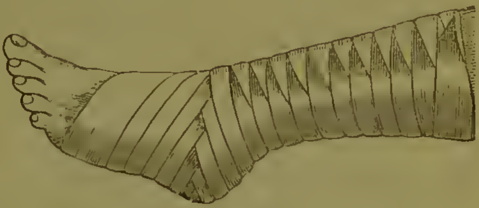

Fig. 69.—Bandage taking in the Heel (from Mr. Walter Pye's *Surgical Handicraft*).

Several of these Nursing Guilds or Corps have now been successfully established, under the auspices of the St. John Ambulance Association, in different parts of the country. I have received much information concerning the guilds existing in Guernsey, Leicester, South Shields, Richmond, and Newark, through the courtesy of their respective hon. secretaries; and my friend Surgeon-Major Hutton has kindly sent me particulars concerning the Hartlepool and Oldham Corps. All these different guilds or corps are, however, established on similar principles, and do their work in the same manner, though of course some, from local circumstances, are more advanced and in better working order than others.

Speaking generally, the *objects of a nursing guild* are—

I. To afford skilful nursing to the poor in their own homes during severe illness, or in case of accident.

II. To form a store of nursing materials (some of which would be for loan only), such as lint, bandages, old linen, linseed meal, turpentine, cotton-wool, gutta-percha tissue, bronchitis kettles, water-beds, air-pillows, inhalers, blankets, sheets, nightdresses, waterproof, and other materials not generally within the reach of the sick poor, and which medical men are, therefore, unable to order, however needful they may be.

III. To obtain the services of ladies holding certificates of efficiency for the work, and willing conscientiously to carry out the directions of the doctor in charge of the case.

A managing committee is formed, with a secretary and other officials, and the duties of the acting members or *nursing associates* are briefly as follows—

I. To carry out conscientiously the directions of the medical man.

II. To see the sick person daily, or as often as necessary.

III. To attend to the general sanitation and cleanliness of the sickroom; to apply (when required) poultices, fomentations, &c., &c.; to see to the washing of the patient, changing linen and sheets, dressing wounds, bed-sores, &c.; to take temperature and note it on a chart for the inspection of the doctor at his visit, and to procure such nursing materials as the case may demand.[1]

No infectious or maternity cases are visited,[2] and "Associates are not permitted to interfere with the religious views of those whom they nurse, or with the ordinary duties of the district visitors."[3] The Corps may (very advantageously, I think) "undertake the distribution of flowers amongst the sick poor."[4] No Associate should take charge, except under directions of the superintendent (or secretary, as may be arranged); and applications for a nurse may be made either by "a signed requisition from the medical man in attendance,"[5] or by "the clergyman, district visitor, or the medical man, or by the friends of the sick person on the recommendation of any of the above."[6] Simple forms of application are needed, such as form A;[7] and some Corps issue in addition other forms to be filled up by the Associates, as Form B.[8]

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[1] Quoted from Rules of Richmond Guild.

[2] Rule No. 12 of Newark Guild.

[3] South Shields and Guernsey Guilds; Newark Associates are "not to touch on personal or religious matters."

[4] South Shields Guild.

[5] Rule 6, Guernsey Guild.

[6] South Shields Guild.

[7] Guernsey Guild.

[8] Richmond Guild.

FORM A

ST. JOHN AMBULANCE NURSING CORPS

Name of Patient ....

Address..

Disease ....

Orders ....

Signed ....

Surgeon.

FORM B

ST. JOHN AMBULANCE NURSING GUILD

Nursing Associate ....

Address..

Date ....

	ATTENDANCE.						REMARKS.
				WEEKS.			
		1	2	3	4	5	
Name of Patient	Sunday ...						
	Monday ...						
....	Tuesday ...						
Address	Wednesday						
	Thursday ..						
....	Friday......						
Illness	Saturday...						

As to the Associates themselves, they must hold both the First Aid and Nursing Certificate of the Ambulance Association; and ladies possessing certificates of efficiency from hospitals or nursing institutions are also permitted to join the guilds.

In a general way, no speciality of dress is enforced. Miss Mollet, of the Guernsey Corps, in reply to my inquries, says, "We wear no outdoor costume, only our ordinary jacket and bonnet. When nursing the sick, all must wear a plainly made grey dress, beige in winter and linen in summer." In addition, members wear a white cap, a large white apron, and the badge of the St. John Ambulance Association (a white cross on a black ground) round the arm.[1] In other instances, there is only worn, in addition to ordinary dress, a white calico hospital apron embroidered with the badge of the St. John Ambulance Association, and the name of the Guild.[2] The Associates perform their duties during the daytime only—usually between 9 A.M. and 9 P.M.,[3] and "carry with them an apron, a towel, piece of carbolic soap, small bottle of permanganate of potash crystals, pair of scissors, pincushion, needle, and thread. Washing to be done at their own expense. Associates to wash their hands before and after seeing the patient, using their own towel."[4]

Such necessaries are in a convenient bag or basket, together with forceps, lint, rags, gutta-percha tissue, bandages, tow, *small* workcase with scissors, needles, tapes, cotton, silk, thimble, &c., as required.[5]

The articles of diet found most useful, I am informed, are "fresh beef for beef-tea, mutton for broth, and chops, arrowroot, corn-flour, French gruel, pearl barley, tapioca, and rice. Each nurse makes what she requires at her house, at her expense, if willing and able to afford it"—if not, she goes to the superintendent and makes it. "The food must be given, or in some cases the sick would not get it."[6] In one neighbourhood the food used consists mainly of "Liebig, and all preparations of beef-tea, daily allowances of milk, which can be used by Associates for making up simple preparations with an egg. Spirit lamps and night-light food warmers much used to keep food warm when the patient is alone, as is often the case."[1] It is of great advantage to the Associates to be instructed in sick cookery. Miss Mollet, of Guernsey, gave all the members of her corps a three months' course of instruction in cooking—a three hours' practical lesson once a week. This example might well be followed in other guilds.

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[1] Guernsey Corps.

[2] Newark Guild.

[3] Guernsey Corps.

[4] Byelaws 5 and 6, Newark Guild.

[5] Richmond Guild.

[6] Guernsey Corps.

The appliances kept in store, and in greatest demand, are found to be air and water-pillows and cushions, water-beds, enema syringes, circular and slipper bed-pans, bed-baths, bed-rests, expectoration cups, feeding cups, leg-rests, mustard, linseed meal, bran, lint, cotton-wool, tow, roller and triangular bandages, carron oil, bronchitis kettles, bronchitis tubes to place on ordinary kettles, sponges, towels, foot-warmers, Condy's fluid, tar soap, carbolic soap, measuring glasses, calico sheets (unbleached), pillow-slips, nightdresses, night-shirts, cotton and linen rags for wounds, &c., and old night-dresses (which sometimes are more useful than new ones).

Although even the oldest of these Nursing Guilds have been in existence but a few years, I find, on inquiry, that they have accomplished much good work in their respective districts. It is very pleasing to know, moreover, that the sick poor greatly appreciate the efforts of those who strive to assist them in their time of trouble. "The gratitude of the sick *most* touching," writes Miss Murray.[2] "The patients nursed have all expressed the greatest gratitude for the care and attention given by the nursing associates," says Mrs. Falkner.[3] "The results have been most satisfactory," states Miss Mollet; "ours is a volunteer corps, it has done so much good I should like to see one in every parish."[4]

What others have done surely you can strive to accomplish, and perhaps to improve upon, always bearing in mind Mrs. Dacre Craven's words—"The district nurse is the *servant of the sick poor* . . . . she has to try *how much* she can do for each patient at each visit, always remembering that, so far as the nature of the case admits of it, every poor person should be as well and as tenderly nursed as if he were the highest in the land."[5]

[1] Richmond Guild.

[2] Ibid.

[3] Newark Guild.

[4] Guernsey Corps.

[5] *Guide to District Nurses.*

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